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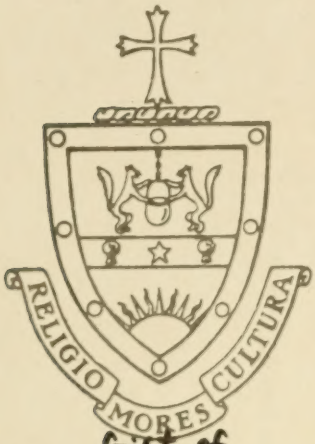

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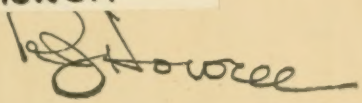

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REPORTS

OF THE

INSPECTORS OF MINES

OF THE

Anthracite and Bituminous Coal Regions of Pennsylvania,

FOR THE YEAR 1891.

HARRISBURG:
EDWIN K. MEYERS, STATE PRINTER.
1892.

VIRTUE
LIBERTY AND INDEPENDENCE

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*There having been a new district created from the First district, the report of the new district is published in connection with the Second district.

REPORTS

OF THE

INSPECTORS OF MINES.

COMMUNICATION.

DEPARTMENT OF INTERNAL AFFAIRS,
HARRISBURG, *July 6, 1892.*

To His Excellency ROBERT E. PATTISON,
Governor of Pennsylvania:

SIR: In compliance with the requirements of the acts of June 30, 1885, relative to the Mine Inspectors' Reports of the Anthracite and Bituminous Coal Regions, and under the provisions of the act approved April 23, 1889, I have the honor to present you herewith, for transmission to the general assembly, the Reports of the Inspectors of Mines for the Coal Regions of this Commonwealth for the year 1891.

Very respectfully yours,
THOS. J. STEWART,
Secretary of Internal Affairs.

1-12-91.

Number of Tons of Coal Produced, Number of Employes, Number of Accidents, etc., for 1891.

Districts.	Number of tons of coal produced.	Number of miners employed.	Number of miners' laborers employed.	Number of employes inside the mines.	Outside employes.	Total employes.	Number of fatal accidents.	Number of non-fatal accidents.	Number of wives made widows.	Number of orphans left.
Anthracite.										
First district (reported with Second district).										
Second district	9,981,356	6,293	5,087	16,271	7,620	23,891	69	215	29	92
Third district	6,125,099	4,045	3,393	4,616	2,586	7,202	60	189	18	63
Fourth district	7,639,250	4,061	4,280	13,006	6,405	19,411	96	168	52	177
Fifth district	5,803,964	2,839	1,935	7,474	7,487	14,961	53	115	25	64
Sixth district	6,419,320	4,742	2,581	11,269	8,172	19,441	65	93	28	76
Seventh district	5,321,044	5,750	1,714	11,605	6,810	18,415	56	155	24	83
Eighth district	3,030,933	2,842	800	5,916	3,888	9,804	28	62	10	37
Total	44,320,966	30,552	19,590	70,157	42,968	113,125	427	997	186	592
Bituminous.										
First district	3,943,265	6,364	452	7,531	718	8,249	20	68	6	18
Second district	6,751,615	6,678	348	8,303	3,080	11,583	134	38	79	45
Third district	3,361,550	4,462	*	5,339	779	6,118	8	34	3	10
Fourth district	3,834,646	4,757	176	5,747	1,020	6,767	6	16	3	25
Fifth district	5,463,801	3,844	158	6,347	4,012	10,349	24	42	15	57
Sixth district	7,000,000	7,779	1,609	9,577	1,952	11,529	13	20	7	23
Seventh district	4,848,174	7,077	451	8,437	763	9,200	7	49	10	22
Eighth district	6,669,159	7,497	843	9,529	801	10,330	14	65	8	24
Total	41,872,210	48,458	4,037	61,010	13,125	74,125	226	333	131	224
Grand total	86,193,176	79,010	23,587	131,167	56,093	187,250	653	1,330	317	816

* Not reported.

SECOND ANTHRACITE DISTRICT.*

(LACKAWANNA AND SUSQUEHANNA COUNTIES.)

OFFICE OF INSPECTOR OF MINES,
SCRANTON, *May, 1891.*

Hon. THOS. J. STEWART:
Secretary of Internal Affairs,

SIR: I have the honor of presenting my annual report for the year ending December 31, 1891, in accordance with article two, section nine, of an act of assembly approved June 2, A. D. 1891.

The general condition of the mines is safe and the ventilation good.

By reference to and examination of the accompanying tables, it will be found that the workings, ventilation and quantity of coal mined, shipped, used for raising steam; and sold at the collieries for local consumption is reported in detail.

SYNOPSIS OF REPORT FOR YEAR ENDING DECEMBER 31, 1891.

Number of mines in district,	100
Average working time (in days) for seventy-four breakers,	222.7
Number of miners employed,	6,293
Number of miners' laborers employed,	5,087
Number of other persons employed in mines,	4,891
Total number of employes in mines,	16,271
Number of persons working outside at collieries,	7,620
Total number of employes,	23,891
Number of tons of coal produced in 1891,	9,981,356.00
Number of tons of coal produced in 1890,	8,932,235.07
Increase in production in 1891,	1,049,120.13
Number of tons of coal shipped in 1891,	9,187,872.12
Number of tons of coal shipped in 1890,	8,192,908.10
Increase in shipments in 1891,	994,964.02

*The report for the mines formerly embraced in the First District is contained in this, for an explanation see act of the Legislature of 1891.—SECRETARY OF INTERNAL AFFAIRS.

Number of tons of coal consumed at mines in 1891,	544, 831.10
Number of tons of coal consumed at mines in 1890,	523, 827.00
Increase in consumption in 1891,	21, 004.10
Number of tons of coal sold for local consumption in 1891,	248, 651.18
Number of tons of coal sold for local consumption in 1890,	215, 499.17
Increase in local coal sales in 1891,	33, 152.01
Number of tons of coal produced for each miner,	1, 586.26
Number of tons of coal produced for each miner and miners' laborer,	877.16
Number of tons of coal produced for each employe in mines,	607.37
Number of tons of coal produced for each employe at collieries,	417.83
Number of fatal accidents,	69
Number of tons of coal produced for each fatal accident,	144, 657
Number of persons employed for each fatal accident,	346
Number of non-fatal accidents,	215
Number of tons of coal produced for each non-fatal accident,	46, 425
Number of widows from accidents at collieries in 1891,	29
Number of tons of coal produced for each widow,	344, 185
Number of children left orphans from accidents in 1891,	92
Number of tons of coal produced for each orphan,	108, 493

There were 320,134 kegs of powder used in mining 9,981,356 tons of coal in 1891, which would give 31.18 tons of coal for each keg of powder used. There are 2,676 horses and mules working in and about the mines in this district, also 42 mine locomotives with a horse-power of 2,286, making in all a total horse-power of 4,962 for transportation of coal in mines and between mines and breakers.

There are 976 steam boilers which supply steam for 444 hoisting, fan and breaker engines, which have a horse-power of 24,558, also 313 pumping engines and steam pumps with a horse-power of 11,362; total horse-power, 35,920.

There are 74 breakers having a capacity for preparing and cleaning 58,530 tons of coal per day for shipment to market. There are also 4 chute buildings for cleaning, separating and dividing coal into various sizes, and shipping some to market direct, and some to breakers to be prepared for market.

There are also 75 fans and 14 furnaces for the purpose of ventilation. There are four mines where they are drawing back pillars, that are not ventilated mechanically.

Respectfully submitted.

PATRICK BLEWITT,
Inspector of Mines.

COLLIERY IMPROVEMENTS FOR YEAR 1892.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY.

Hyde Park Shaft.—Sunk an air shaft from Big vein to New County vein 6′×10′=60′ and 28′ deep; also sunk an air shaft from New County to Clark vein 6′×10′=60′ and 78′ deep, and drove a tunnel from Big to New County vein 7′×11′ and 146′ in length.

Tripp Shaft.—Extended slope towards the river 700′ in length.

Dodge.—Opened from New County from Big vein.

Brisbin Shaft.—Drove new plane up the west mountain in Clark vein 700′ long.

Storrs No. 1 Shaft.—Driving a slope south; also opened a drift in the Richmond vein and put up a new fan, but they will not get much coal as it is too near the outcrop; also sunk No. 3 Storr's, formerly called Cayuga No. 2, from G or Big 155′ deep to the Clark vein, and they are opening in the Clark and Diamond veins.

Pyne Shaft.—Opened a new plane in the New County vein 530′ long.

DELAWARE AND HUDSON CANAL COMPANY.

Leggett's Creek Shaft.—Are now working coal in Clark vein.

Olyphant No. 2 Shaft.—Finished a new lowering plane in 14′ vein.

Jermyn No. 1 Shaft.—Drove a new second opening from daylight and connected inside with both veins.

PENNSYLVANIA COAL COMPANY,
DUNMORE, PA., *1891.*

MR. PATRICK BLEWITT,
Mine Inspector of Second Anthracite District:

We have during the year started a slope on a grade of 7°, to open up what is known as the Sawyer vein. Mouth of slope situated N. 74 E. and 235′ from east corner of No. 1 breaker boiler house and 450′ north of Old Smith tunnel. Course of slope N. 79° W. We have driven on above grade and course 175′ Uncovered the coal at a distance of 137′ from mouth of slope. When finished it will be from 900′ to 1,200′ long.

I wish to call your attention to Bunker Hill breaker; while the breaker itself is situated in the Second anthracite district, the coal is prepared and accounted for in the Third or McDonald's district. The breaker for the present is used only to screen coal that has already been prepared in excess of the market's demands, the same coal having already been prepared at the several breakers near the mines and shipped to the company's dumping grounds near this breaker.

Yours very respectfully,

JAMES YOUNG,
Mine Superintendent.

Dolph Tunnel.—Inside slope or dip being driven to crop at south end of property, and operated by a pair of hoisting engines located on surface; rope through bore-hole. Opening being driven from crop, up to meet said slope. Electricity is used for signaling.

Marshwood Slope and Tunnel.—Additional traveling way made on eastern crop of vein for men and mules, thus avoiding the use of the air shaft by miners and laborers and the slope for mules. No. 3 drift in Upper Dunmore gangway and airway driven in 350′. No. 4 drift in Upper Dunmore gangway and airway driven in 125′. Pennsylvania slope, in new territory, acquired from Pennsylvania Coal Company, sunk 300′.

Jones, Simpson & Co.—Set new boilers at breaker.

Pancoast Shaft.—Continued tunneling vein towards old slope workings which were filled with water, when 80′ from old workings, water was tapped from two headings with $2\frac{5}{8}$″ holes and is now being pumped out.

Rushbrook Mines.—Have graded and laid $1\frac{1}{4}$ miles of track, 3′ gauge, with 40 pounds railroad iron; built new boiler house 21′×55′, engine house 27′×34′, and fan house 14′×31′, with tower 13′×16′ and 36′ high.

Spencer's Shaft.—Driving slope through strata from middle to bottom vein on an incline of 15′ to 100′ horizontal.

There were no improvements reported from any of the other collieries except what were necessary to provide for keeping the workings in such a condition as to provide for the quantity of coal required.

TABLE I.—*Showing Location of Collieries, etc., in the First and Second Anthracite Districts for the year ending December 31, 1891.*

No. of dist.	NAME OF COLLIERY.	Name of Operator.	Location—Lackawanna County.	Name of Superintendent.
2	Archbald shaft	Dela., Lack. & Western R. R. Co.	Lackawanna township	
2	Bellevue slope	do. do.	do. do.	
2	Bellevue shaft	do. do	do.	
2	Brisbin shaft	do. do.	Third ward, Scranton	
2	Continental shaft	do. do.	Lackawanna township	
2	Cayuga shaft	do. do.	Third ward, Scranton	
2	Dodge shaft	do. do.	Lackawanna township	
2	Hampton shaft	do. do.	do. do.	Wm. R. Storrs, general coal agent.
2	Hyde Park shaft	do. do.	Fifth ward, Scranton	Wm. H. Storrs, assistant coal agent.
2	Holden shaft	do. do.	Lackawanna township	B. Hughes, general mine superintendent.
2	Manville shaft	do. do.	Thirteenth ward, Scranton	Thos. D. Davis, assistant mine superintendent.
2	Oxford shaft	do. do.	Fifth ward, Scranton	Thos. W. Phillips, assistant mine superintendent.
2	Pyne shaft	do. do.	Lackawanna township	John T. Snyder, chief engineer mine department.
2	Sloan shaft	do. do.	do. do.	Townsend Poor, master mechanic.
1	Storrs Nos. 1 and 2 shafts	do. do.	Dickson City borough	
1	Storrs No. 3 shaft	do. do.	do. do.	
2	Tripp shaft	do. do.	Twenty-first ward, Scranton	
2	No. 2 Diamond shaft	do. do.	do. do.	
2	Taylor shaft	do. do.	Lackawanna township	
2	Taylor drift	do. do.	do. do.	
1	Clinton slope and drift	Delaware and Hudson Canal Co.	Fell township	A. H. Vandling, general superintendent coal department.
1	Coal Brook tunnel	do. do.	City of Carbondale	
1	Midland tunnel	do. do.	Fell township	
1	No. 1 shaft, Carbondale	do. do.	City of Carbondale	
1	No. 3 shaft, Carbondale	do. do.	do. do.	
1	White Bridge tunnel	do. do.	do. do.	
1	Powderly slope	do. do.	Carbondale township	
1	Jermyn No. 1 shaft	do. do.	Jermyn borough	
1	White Oak and No. 5 tunnels	do. do.	Archbald borough	J. M. Chittenden, general outside superintendent.
1	Grassy Island shaft	do. do.	Olyphant borough	Andrew Nicol, general mine superintendent.
1	Olyphant No. 2 shaft	do. do.	do.	Andrew P. Patton, assistant mine superintendent.
1	Eddy Creek shaft	do. do.	do.	Christ. Shearer, chief engineer mine department.
1	Marvine shaft	do. do.	First ward, Scranton	Alexander Simpson, master mechanic.
1	Leggett's Creek shaft	do. do.	do.	
2	Dickson shaft	do. do.	Second ward, Scranton	
2	Manville (one-half) shaft	do. do.	Thirteenth ward, Scranton	
2	Von Storch slope and shaft	do. do.	Second ward, Scranton	
1	Wilson Creek tunnel	do. do.	Fell township	
1	Racket Brook breaker	do. do.	Carbondale township	
2	Meadow Brook shaft	William Connell & Co.	Twentieth ward, Scranton	William Connell.
2	Meadow Brook tunnel	do. do.	do. do.	
2	National slope and shaft	do. do.	do. do.	

TABLE I—*Continued.*

No. of dist.	NAME OF COLLIERY.	Name of Operator.	Location—Lackawanna County.	Name of Superintendent.
2	Stafford shaft	William Connell & Co.	Lackawanna township	William Connell.
1	Shaft No. 1, Dunmore	Pennsylvania Coal Company	Dunmore borough	John B. Smith, general superintendent.
2	Bunker Hill No. 1	do. do.	do.	George B. Smith, assistant superintendent.
1	Gypsy Grove Nos. 3 and 4	do. do.	do.	James Young, mine superintendent.
2	Shaft No. 5	do. do.	do.	
1	Clifford shaft	Hillside Coal and Iron Company	Forest City borough, Susq. co.	
1	Forest City slope and shaft	do. do.	do. do.	
1	Erie shaft	do. do.	Mayfield borough	W. A. May, general superintendent.
1	Glenwood shafts Nos. 1 and 2	do. do.	do.	
1	Keystone tunnel	do. do.	do.	
1	Jermyn No. 5 shaft	John Jermyn	Dickson City borough	W. M. Jermyn, general superintendent.
1	Jermyn No. 4 shaft	do.	do.	do. do.
2	Green Ridge slope	O. S. Johnson	Dunmore borough	O. S. Johnson, general superintendent.
1	Lackawanna Coal Company shaft	Lackawanna Coal Company	Blakely borough	do. do.
2	Capouse shaft	Lackawanna Coal and Iron Company	Twenty-first ward, Scranton	Reese G. Brooke, general superintendent.
2	Pine Brook shaft	do. do.	Seventh ward, Scranton	do. do.
1	Edgerton drifts	Edgerton Coal Company, Limited	Archbald borough	J. L. Crawford, general superintendent.
1	Simpson slopes	Northwest Coal Company	Fell township	J. W. White, assistant superintendent.
2	Church slopes	Church Coal Company	Second ward, Scranton	M. F. Dolphin, general superintendent.
2	Providence Coal Company shaft	Providence Coal Company	do. do.	do. do.
1	Dolph tunnel	Dolph Coal Company, Limited	Winton borough	W. G. Robertson, general superintendent.
1	Elk Creek drifts	Frisbie, Blanchard & Co.	Fell township	W. E. Frisbie, general superintendent.
1	Grassy Island shaft	Grassy Island Coal Co., Limited	Winton borough	James Archbald, Jr., general superintendent.
1	Clark tunnel	James Flynn & Co.	Third ward, Scranton	James Flynn.
1	Murray and Jackson tunnels	Murray & Jackson	Dunmore borough	M. J. Murray, general superintendent.
1	Jones, Simpson & Co.'s drift and shaft	Jones, Simpson & Co.	Archbald borough	Edw. Jones, gen. supt.; Edw. S. Jones, asst. supt.
1	Pierce slope and tunnel	Pierce Coal Company, Limited	do.	Edw. Jones, gen. supt.; Davy Morgan, asst. supt.
1	Mount Jessup slope	Mount Jessup Coal Co., Limited	Winton borough	Eli. T. Conner, general superintendent.
1	Marshwood slope	Moosic Mountain Coal Company	do.	Charles P. Ford, general superintendent.
2	Mount Pleasant shaft	Wm. T. Smith	Fourteenth ward, Scranton	
1	Ontario shaft	New York and Scranton Coal Co.	Blakely borough	W. W. Patterson, general superintendent.
1	Pancoast shaft	Pancoast Coal Company	Dickson City borough	Charles D. Sanderson, general superintendent.
1	Rushbrook shaft	Rushbrook Coal Company	Archbald borough	John S. Jenkins.
2	Spencer's shaft	A. D. & F. M. Spencer	Dunmore borough	A. D. and F. M. Spencer, general superintendents.
1	S. V. White tunnel	Winton Coal Company Limited	Winton borough	B. M. Winton, general superintendent.

TABLE I—*Continued.*

No. of dist.	NAME OF COLLIERY.	Postoffice Address.	Name of Mine Foremen.	Name of Outside Foremen.
2	Archbald shaft	Scranton, Pa.	Joseph D. Lloyd	John Fern and Wm. H. Fern.
2	Bellevue slope	do.	David Z. Davis	B. C. Green.
2	Bellevue shaft	do.	John Hale	
2	Brisbin shaft	do.	Frank Zimmerman	E. H. Evans.
2	Continental shaft	do.	R. H. Williams	J. F. Green.
2	Cayuga shaft	do.	John P. Morgan	Giles Decker.
2	Dodge shaft	do.	Ed. James	Wm. Beachman.
2	Hampton shaft	do.	Elijah Dagger	J. H. Hoffman.
2	Hyde Park shaft	do.	D. W. Moser	S. M. Ives.
2	Holden shaft	do.	E. J. Evans	H. A. Filmore.
2	Manville shaft	do	D. S. Evans	J. L. Atherton.
2	Oxford shaft	do.	R. A. Phillips	Wm. B. Thornton.
2	Pyne shaft	do.	James M. Thomas	A. Reinhardt.
2	Sloan shaft	do.	Lewis Roberts and Henry P. Davis	Fred. Peters.
1	Storrs Nos. 1 and 2 shafts	do.	Thomas Carson	J. C. Bowman.
1	Storrs No. 3 shaft	do.	Richard Evans	
2	Tripp shaft	do.	James A. Evans	Wm. S. Langstaff.
2	No. 2 Diamond shaft	do.	Wm. R. Evans	do.
2	Taylor shaft	do.	John R. Johns	J. P. Cooper.
2	Taylor drift	do.	H. E. Harris	H. J. Cooper.
1	Clinton slope and drift	do.	Wm. Bryden	Henry Carter.
1	Coal Brook tunnel	do.	Wm. McMyne	Robert Carter.
1	Midland tunnel	do.	Wm. Dunstan	do.
1	No. 1 shaft, Carbondale	do.	John Scott	
1	No. 3 shaft, Carbondale	do.	Morgan Thomas	Thomas Coogan.
1	White Bridge tunnel	do.	John Waterfield	Mike Campbell.
1	Powderly slope	do.	Thomas Jordan	Sidney Crocker.
1	Jermyn No. 1 shaft	do.	Joseph Tennis	Thomas Hunter.
1	White Oak and No. 5 tunnels	do.	J. J. Kearney	Thomas Law.
1	Grassy Island shaft	do.	David E. Lewis	I. G. Bell.
1	Olyphant No. 2 shaft	do.	Alexander Frew	John T. Mooney.
1	Eddy Creek shaft	do.	Wm. H. Davis and Mathew Gray	B. E. Kingsley.
1	Marvine shaft	do.	Andrew Smith	George Griffin.
1	Leggett's Creek shaft	do.	Findley Ross	G. W. Wilder.
2	Dickson shaft	do.	Alexander Aikman	William Richmond.
2	Manville (one-half) shaft	do.	Returned on Dela., Lack. & W. R. R. report.	
2	Von Storch slope and shaft	do.	Martin Loftus and Ed. Jones	Charles W. Zeigler.
1	Wilson Creek tunnel	do.	Wm. Dunstan	Robert Carter.
1	Racket Brook breaker	do.		James Loftus.
2	Meadow Brook shaft	do.	Samuel T. Jones	Malachi L. Coyne.
2	Meadow Brook tunnel	do.	do.	do.
2	National slope and shaft	do.	do.	Frank Sleppy.
2	Stafford shaft	do.	Evan T. Morgan	do.
1	Shaft No. 1, Dunmore	Dunmore, Lackawanna county, Pa.	Thomas R. Young	James Masters.

TABLE I—*Continued.*

No. of dist.	NAME OF COLLIERY.	Postoffice Address.	Name of Mine Foremen.	Name of Outside Foremen.
2	Bunker Hill No. 1	Dunmore, Lackawanna county, Pa.		
1	Gypsy Grove Nos. 3 and 4	do. do.	Thomas Protheroe	James Masters.
2	Shaft No. 5		John Reed.	
1	Clifford shaft	Scranton, Pa.	James White	John J. Aiken.
1	Forest City slope and shaft	do.	Benjamin Maxey and George Maxey, assistant	John T. Gallagher.
1	Erie shaft	do.	Michael Barbour	James J. Walker.
1	Glenwood shafts Nos. 1 and 2	do.	M. M. Walsh and Charles Davis	Robert Kerwin.
1	Keystone tunnel	do.	Wm. J. Glennen	Wm. Bergen.
1	Jermyn No. 3 shaft	do.	S. W. Winaric	Wm. E. Merritt.
1	Jermyn No. 4 shaft	do.	John F. O'Hara	Wm. Priest.
2	Green Ridge slope	do.	Robert Martin	Wm. S. Boyd.
1	Lackawanna Coal Company shaft	do.	John Burkheiser	Wm. Harper.
2	Capouse shaft	do.	Wm. P. Morgan	D. J. Bevan.
2	Pine Brook shaft	do.	John H. Powell	Henry Hess.
1	Edgerton drifts	Jermyn, Lackawanna county, Pa.	John Marion and E. E. Reynolds	J. G. Shepherd.
1	Simpson slopes	do. do.	Wm. Brown	James Boyle.
2	Church slopes	Scranton, Pa.	J. J. Gibbons	M. F. Dolphin.
2	Providence Coal Company shaft	do.	do.	do.
1	Dolph tunnel	do.	James W. Smith	Arthur Craig.
1	Elk Creek drifts	Carbondale, Pa.		
1	Grassy Island shaft	Scranton, Pa.	Daniel Dorris.	
1	Clark tunnel	do.	James Flynn	James Flynn.
1	Murray and Jackson	Dunmore, Pa.	M. J. Murray	John Carney.
1	Jones, Simpson & Co.'s drift and shaft	Archbald, Pa.	David Williams	Daniel J. Gilmartin.
1	Pierce slope and tunnel	do.	T. Frank Battle	Eugene Taylor.
1	Mount Jessup slope	Winton, Lackawanna county, Pa.	Henry Chapman	Oscar M. Bittler.
1	Marshwood slope	Marshwood, Lackawanna county, Pa.	Geo. P. Davis	Nelson Nothstine.
2	Mount Pleasant shaft	Scranton, Pa.	John Von Bergen	Thomas Sprague.
1	Ontario shaft	Peckville, Lackawanna county, Pa.	Anthony Gillespie	Richard J. Urell.
1	Pancoast shaft	Throop, Lackawanna county, Pa.	Joseph V. Birtley and John Indian, assistant	Edwin Banfield.
1	Rushbrook shaft	Scranton, Pa.	Thomas Langan	W. C. Wared.
2	Spencer's shaft	Dunmore, Lackawanna county, Pa.	P. H. Morgan	A. D. Spencer.
1	S. V. White tunnel	Winton, Lackawanna county, Pa.	Reese R. Griffiths	A. S. Hartman.

TABLE II—*Gives the total number of tons of coal mined, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the First and Second Anthracite Districts for the year ending December 31, 1891.*

NAME OF COLLIERIES.	Location of Collieries.	Total production of coal in tons.	Total number of tons of coal shipped to market.	Total number of tons of coal consumed at mines.	Total number of tons of coal sold at mines.	Mode of ventilation.	Number of kegs of powder used at mines.	Number of persons employed.	Number of days worked.
Delaware, Lackawanna and Western Railroad Company.									
1. Archbald shaft and slope	Lackawanna township, Lacka. co.,	16,472,707	15,632,007	730,000	110,700	Fan.	5,353	505	172.1
2. Bellevue shaft	do. do. do.	24,420,909	22,381,409	1,632,500	407,000	do.	6,544	561	196.8
3. Bellevue slope	do. do. do.								
4. Brisbin shaft	Third ward, Scranton, Lacka. co.,	18,860,512	17,646,812	990,000	223,700	do.	5,267	456	190.8
5. Continental shaft	Lackawanna township, do.	17,339,417	16,576,717	540,000	222,700	do.	4,413	469	200.4
6. Cayuga shaft	Third ward, Scranton, do.	13,773,119	12,076,019	1,500,000	197,100	do.	4,374	419	185
7. Central shaft.*	Fifteenth ward, Scranton, do.								
8. Dodge shaft	Lackawanna township, do.	17,388,810	16,226,410	1,000,000	162,400	Fan.	5,220	384	191.7
9. Hampton shaft	do. do. do.	15,577,806	14,564,606	800,000	213,200	do.	5,081	423	197
10. Hyde Park shaft	Fifth ward, Scranton, do.	12,638,801	11,783,601	660,000	195,200	do.	4,490	366	177
11. Holden shaft	Lackawanna township, do.	13,538,916	12,923,316	500,000	115,600	do.	3,700	242	176
12. Manville shaft, half time	Thirteenth ward, Scranton, do.	4,903,608	3,878,608	800,000	225,000	2 fans.	3,001	277	74.5
13. Oxford shaft	Fifth ward, Scranton, do.	15,294,606	12,992,906	900,000	1,401,700	Fan.	4,564	403	188.3
14. Pyne shaft	Lackawanna township, do.	17,641,918	16,488,718	1,000,000	153,200	do.	4,782	407	189.7
15. Sloan shaft	do. do. do.	20,224,611	17,366,111	2,770,000	88,500	do.	4,781	470	184.7
16. Storrs Nos. 1, 2 and 3 shafts	Dickson City borough, do.	26,458,705	24,305,205	2,010,000	143,500	2 fans.	8,489	771	174.3
17. Tripp and Diamond No. 2 shaft	Twenty-first ward, Scranton, do.	24,359,106	20,957,606	3,000,000	401,500	3 fans.	6,583	540	191.5
18. Taylor shaft and drift	Lackawanna township, do.	18,300,310	17,210,610	800,000	289,700	do.	5,124	449	194.8
Miscellaneous employes.†								215	
Totals		277,194,501	253,011,301	19,632,500	4,550,700		85,766	7,357	184.9

TABLE II—*Continued.*

NAME OF COLLIERIES.	Location of Collieries.	Total production of coal in tons.	Total number of tons of coal shipped to market.	Total number of tons of coal consumed at mines.	Total number of tons of coal sold at mines.	Mode of ventilation.	Number of kegs of powder used at mines.	Number of persons employed.	Number of days worked.
Delaware and Hudson Canal Company.									
19. Clinton slope and drift,	Fell township, Lackawanna county,	12,283,210	11,873,710	328,500	81,007	Fan,	4,913	250	221.25
20. Coalbrook tunnel,	Carbondale city, do. do.			429,210		do.		342	210.5
21. Midland tunnel,	Fell township, do. do.	23,501,808	22,928,900		33,618	do.	8,149	11	210.5
22. Wilson Creek tunnel,	do. do. do. do.			110,000		do.		252	210.5
23. Dickson shaft,	Second ward, Scranton, Lacka. co.,	25,516,107	24,530,607	930,000	246,813	do.	6,751	444	230.25
24. Eddy Creek shaft,	Olyphant borough, do.	5,918,717	5,261,717	657,000	103,505	do.	1,697	300	88.75
25. Grassy Island shaft,	do. do. do.	16,209,904	15,060,114	1,149,710	304,100	do.	4,445	421	222
26. Jermyn No. 1 shaft,	Jermyn borough, do.	19,413,718	18,373,508	1,040,210	437,108	do.	4,097	440	202.5
27. Leggett's Creek shaft,	First ward, Scranton, do.	18,006,414	17,185,204	821,210	475,413	do.	4,419	377	220
28. Marvine shaft,	do. do. do. do.	18,580,117	17,430,407	1,149,710		do.	4,523	427	221.5
29. No. 1 shaft, Carbondale,	Carbondale city, do.	4,794,917	4,685,417	275,000		do.	3,011	76	199.5
30. No. 3 shaft, Carbondale,	do. do. do.	3,358,912	2,701,912	657,000		do.	1,450	144	172.5
31. Olyphant No. 2 shaft,	Olyphant borough, do.	13,867,013	13,045,803	821,210	88,813	do.	4,297	346	226.75
32. Powderly slope	Carbondale township, do.	8,353,716	7,861,006	492,710		do.	4,357	249	205.75
33. Von Storch slope,	Second ward, Scranton do.	25,598,118	24,010,408	1,587,710	813,419	do.	7,225	340	
34. Von Storch shaft Clark vein,	do. do. do. do.					do.		265	224.75
35. White Oak tunnels Nos. 3½ and 5,	Archbald borough, do.	16,694,409	16,475,409	219,000	241,208	Furnace,	4,604	401	220
36. White Bridge tunnel, †	Carbondale city, do.					Fan,		176	242
37. Manville shaft half time,	Thirteenth ward, Scranton, do.	4,430,303	3,937,513		118,406		3,018		73.5
38. Rackett Brook breaker,	Carbondale township, do.	13,685,114	13,502,614	182,500				99	242
Miscellaneous employes, †								100	
Totals,		230,213,217	216,040,617	11,233,710	2,868,810		66,954	5,460	217.85

Hillside Coal and Iron Company.									
39. Clifford shaft and slope,	Forest City borough, Susq. co.,	13,721,809	12,551,309	1,170,500		Fan,	5,300	257	208
40. Forest City shaft,	do. do. do. do.	22,904,318	20,302,214	2,084,000	518,104	do.	5,513	408	244
41. Forest City slope,	do. do. do. do.						4,004	158	244
42. Erie shaft,	Mayfield borough, Lacka. co.	20,965,406	19,668,003	871,200	426,203	do.	7,134	496	237
43 Glenwood shafts Nos. 1 and 2,	do. do. do.	27,891,107	26,766,315	847,200	277,512	do.	7,178	482	244.75
44. Keystone tunnel,	do. do. do.	9,430,404	9,250,404	180,000		Furnace,	2,307	208	236.25
Totals,		94,913,204	88,538,405	5,152,900	1,221,819		31,436	2,009	235.75
O. S. Johnson, Operator.									
45. Green Ridge slope,	Dunmore borough, Lacka. co.,	13,192,510	12,062,603	825,000	304,907	Fan,	6,484	248	226.75
46. Lackawanna Coal Company's shaft,	Blakely borough, do.	34,565,807	33,615,316	720,000	230,411	do.	9,577	571	300.8
Totals,		47,758,317	45,677,919	1,545,000	535,318		16,061	819	263.77
William Connell & Co.									
47. Meadow Brook shaft,	Twentieth ward, Scranton, Lacka. co.,	23,347,800	19,324,800	584,000	3,439,000	Fan,	6,613	338	226
48. Meadow Brook tunnel,	do. do. do. do.	5,628,000	5,576,000	52,000		Furnace,	820	45	191.4
49. National shaft,	do. do. do. do.	8,914,800	6,352,400	562,400	2,000,000	Fan,	3,853	239	191.4
50. Stafford shaft,	Lackawanna township, do.	2,981,500	2,861,500	120,000		do.	1,946	72	191.4
Totals,		40,872,100	34,114,700	1,318,400	5,439,000		13,332	694	210.2
John Jermyn.									
51. Jermyn No. 3 shaft,	Dickson City borough, Lacka. co.,	16,961,519	16,301 519	660,000		Fan,	6,024	489	234.7
52. Jermyn No. 4 shaft,	do. do. do. do.	12,809,200	11,406,412	1,155,000	247,708	do.	4,361	348	195.5
Totals,		29,770,719	27,708,011	1,815,000	247,708		10,385	837	215.1
Lackawanna Iron and Coal Company.									
53. Capouse shaft,	Twenty-first wd., Scranton, Lack. co.,	24,289,400	23,288,300	750,000	251,100	2 fans,	8,131	556	184.7
54. Pine Brook shaft,	Seventh ward, do. do.	24,346,400	21,815,800	422,400	2,108,200	do.	9,750	578	184.5
Totals,		48,635,800	45,104,100	1,172,400	2,359,300		17,881	1,134	184.6
Simpson and Watkins.									
55. Edgerton drifts,	Archbald borough, Lacka. co.,	21,740,310	20,454,510	1,230,000	55,800	Furnace,	6,414	405	201
56. Simpson slopes,	Fell township, do.	29,350,000	27,614,310	1,661,300	74,310	Fan,	9,202	410	267
Totals,		51,090,310	48,068,900	2,891,300	130,110		15,616	815	234
Pennsylvania Coal Company.									
57. No. 1 shaft,	Dunmore borough, Lacka. co.,	8,978,400	8,685,900	292,500		Fan,	4,198	220	206
58. No. 3 shaft, Gypsy Grove,	do. do. do.	12,918,100	12,622,600	295,500		do.	5,322	266	205
59. No. 4 shaft, Gypsy Grove,	do do. do	15,325,200	15,069,800	255,400		do.	6,208	390	210 5
60. No. 5 shaft,	do. do. do.								
Totals,		37,221,700	36,378,300	843,400			15,728	876	207.1
Other Miscellaneous Coal Companies.									
61. Church slope,	Second ward, Scranton, Lacka. co.,	1,410,713	646,708	250,000	514,005	Furnace,	297	38	152
62. Providence Coal Company shaft,	do. do. do. do.	7,159,608	5,607,302	630,000	922,305	Fan	3,017	197	231

TABLE II—*Continued.*

NAME OF COLLIERIES	Location of Collieries.	Total production of coal in tons.	Total number of tons of coal shipped to market.	Total number of tons of coal consumed at mines.	Total number of tons of coal sold at mines.	Mode of ventilation.	Number of kegs of powder used at mines.	Number of persons employed.	Number of days worked.
63. Clark tunnel	First ward, Scranton, Lacka. co.	454,610	8,805	26,000	419,805	Natural.	78	12	150
64. Dolph tunnel	Winton borough, do.	6,948,919	6,704,019	150,000	94,900	Fan.	3,064	237	144.5
65. Reese and Moser drifts	Carbondale township, do.	4,350,106	4,215,106	135,000		Furnace.	1,591	124	369.4
66. Marshwood slope	Dickson City borough, do.	6,359,716	5,574,906	750,000	34,810	Fan.	2,536	143	218
67. Mount Jessup slope	Winton borough, do.	6,967,917	6,256,208	655,000	56,709	do.	2,508	251	171.5
68. Mount Pleasant shaft	Fourteenth ward, Scranton, do.	18,698,200	16,205,900	770,000	1,722,300	2 fans.	9,145	471	200
69. Murray and Jackson shaft	Dunmore borough, do.	1,956,400	1,450,400	40,000	466,000	Natural.	770	29	294
70. Jones, Simpson & Co., shaft and drift	Archbald borough, do.	16,520,006	15,713,106	806,500	400	2 fans.	5,474	465	213
71. Grassy Island shaft and drift	Winton borough, do.	258,200	6,800	250,000	1,400	Fan.	22	22	
72. Ontario shaft	Blakely borough, do.	6,803,700	5,753,700	900,000	150,000	2 fans.	3,933	314	223.4
73. Pierce slope and tunnel	Archbald borough, do.	9,914,500	9,571,000	330,000	13,500	Fan.	2,408	212	147.9
74. Pancoast shaft	Dickson City borough, do.	18,648,503	17,223,101	1,210,000	215,402	do.	6,606	414	228.75
75. Rushbrook shaft	Archbald borough, do.	3,341,100	2,975,200	338,000	27,900	do.	1,933	132	191.4
76. Riverside shaft	do. do. do.	460,600	438,000	22,600		do.	300	84	6.9
77. Spencers shaft	Dunmore borough, do.	14,610,000	13,491,510	605,000	513,410	do.	5,680	326	182.75
78. S. V. White shaft	Winton borough, do.	7,034,417	6,680,917	341,000	12,500	Furnace.	2,313	192	198.1
79. Tripp & Co., local coal sale	Twenty-first ward, Scranton, do.	1,540,000	30,000		1,510,000	do.		33	264
80. John Murtin, local coal sale	Fell township, do.	222,200		55,000	167,200	do.	70	10	166
81. Mill Creek, local coal sale	do. do. do.	437,600	390,000	37,600	10,000	do.	155	11	187
82. West Side Coal Company, local coal sale	Jermyn borough, do.	229,900	149,400	5,600	74,900	do.	70	23	58
83. Erisbie Coal Company, local coal sale	Fell township, do.	1,096,213	1,038,713	40,000	17,500	do.	300	30	200
84. W. M. Weeks, local coal sale	Clifford borough, Wayne county.	345,002	292,002	25,000	28,000	do.	148	18	210
85. Elk Hill Coal and Iron Company	First ward, Scranton, Lacka. co.	4,282,802	3,721,515	468,200	43,007	Fan.	1,100	150	139.5
Totals		140,001,412	124,144,719	8,840,500	7,016,113		46,890	3,522	208.2

* Coal prepared at Sloan and Hampton collieries. No report made this year. † Superintendents, officers, surveyors, masons, carpenters, etc. ‡ Coal prepared and shipped from Rackett Brook breaker. § No coal mined in 1891. No work done except pumping to keep mines free from water.

2-12-91.

Recapitulation.

Delaware, Lackawanna and Western Railroad Company	2,771,945.01	2,530,113.01	196,325.00	45,507.00	22	85,766	7,357	184.9
Delaware and Hudson Canal Company	2,302,132.17	2,160,406.17	112,337.00	29,388.10	16	66,954	5,460	217.85
Hillside Coal and Iron Company	949,132.04	885,384.05	51,529.00	12,218.19	5	31,436	2,009	235.75
O. S. Johnson	477,583.17	456,779.19	15,450.00	5,353.18	2	16,061	819	263.77
William Connell & Co.	408,721.00	341,147.00	13,184.00	54,390.00	3	13,232	694	210.2
John Jermyn	297,707.19	277,080.11	18,150.00	2,477.08	2	10,385	837	215.1
Lackawanna Iron and Coal Company	486,358.00	451,041.00	11,724.00	23,593.00	4	17,881	1,134	184.6
Simpson & Watkins	510,903.10	480,689.00	28,913.00	1,301.10	1	15,616	815	234
Pennsylvania Coal Company	372,217.00	363,783.00	8,434.00	. . . . .	4	15,728	876	207.1
Miscellaneous coal companies	1,400,014.12	1,241,447.19	88,405.00	70,161.13	15	46,890	3,522	208.2
Four local coal sale mines	4,640.00	. . . . .	380.00	4,260.00	. . . . .	185	35	. . . .
Grand totals	9,981,356.00	9,187,872.12	544,831.10	248,651.18	74	320,134	23,558	222.71

TABLE II—*Continued.*

NAME OF COLLIERIES.	Number of fatal accidents.	Number of non-fatal accidents.	Number of widows.	Number of orphans.	Number of coal breakers.	Capacity of breakers per day of 10 hours work.	Number of openings, shafts, slopes, tunnels and drifts.	Number of pumping engines and steam pumps.	Horse power of pumping engines and steam pumps.	Number of breaker, fan and hoisting engines.	Horse power of breaker, fan and hoisting engines.	Number of mine locomotives.	Horse power of mine locomotives.	Total horse power.	Total number of engines.	Number of boilers.
Delaware, Lackawanna and Western Railroad Company.																
1. Archbald shaft and slope					1	1,000	2	4	156	5	286			442	9	14
2. Bellevue shaft							2									
3. Bellevue slope					1	1,000	2	17	424	11	903	1	92	1,419	29	24
4. Brisbin shaft					1	1,000	2	13	480	5	285			767	18	17
5. Continental shaft					1	1,000	2	8	321	5	490			811	13	15
6. Cayuga shaft					1	950	2	5	602	4	554	1	92	1,248	10	24
7. Central shaft *																
8. Dodge shaft					1	900	2	8	261	6	323	1	92	676	15	21
9. Hampton shaft					1	1,000	2	5	157	5	306			463	10	16
10. Hyde Park					2	1,000	2	1	19	6	358			377	7	12
11. Holden shaft					1	1,000	2	5	106	7	630			736	12	12
12. Manville shaft, half time					1	900	2	4	126	13	571			697	17	18
13. Oxford shaft					1	900	2	7	156	9	365	1	92	613	17	19
14. Pyne shaft					1	1,100	2	4	285	5	558	1	92	935	10	22
15. Sloan					1	1,000	4	28	1,568	14	1,116	3	256	2,940	45	49
16. Storrs Nos. 1, 2 and 3					1	1,500	4	7	131	14	1,506	3	256	1,893	24	18
17. Tripp and Diamond No. 2 shaft					1	1,250	4	17	705	15	1,002	3	256	1,963	35	55
18. Taylor shaft and drift					1	1,000	4	9	284	11	593			877	20	16
Miscellaneous employes																
Totals					16	16,500	42	142	5,789	135	9,848	14	1,228	16,857	291	352
Delaware and Hudson Canal Company.																
19. Clinton slope and drift	1	5			1	500	3	2	30	4	80			110	6	6
20. Coal Brook tunnel							2									
21. Midland tunnel					1	1,100	1	2	30	5	100	1	25	155	8	9
22. Wilson Creek tunnel							1									
23. Dickson shaft	2	8			1	1,100	3	5	180	13	430			610	18	18
24. Eddy Creek shaft		15			1	600	2	3	118	9	516			634	11	12

25. Grassy Island shaft	2	6			1	675	3	8	266	7	268	1	25	559	16	21
26. Jermyn No. 1 shaft		3			1	1,000	3	5	165	7	268			433	12	19
27. Leggett's Creek shaft	1				1	850	2	7	231	9	470			701	16	15
28. Marvine shaft	1	10			1	850	2	4	320	5	310			630	9	21
29. No. 1 shaft, Carbondale					1	†	2	3	75	1	36			111	4	5
30. No. 3 shaft, Carbondale					1	†	2	2	140	3	160			300	5	12
31. Olyphant No. 2 shaft	1				1	575	2	6	297	7	245			542	13	15
32. Powderly slope					1	†	2	4	50	4	80			130	8	9
33. Von Storch slope	1				1	1,100	2	6	230	12	503			733	18	29
34. Von Storch shaft, Clark vein							2									
35. White Oak tunnels Nos. 3½ and 5		8			1	750	4			2	86	1	25	111	3	7
36. White Bridge tunnel							2									
37. Manville shaft, half time. ‡																
38. Rackett Brook breaker					1	550				1	25			25	1	5
Miscellaneous employes																
Totals					15	9,650		56	2,132	89	3,577	3	75	5,784	148	205
Hillside Coal and Iron Company.																
39. Clifford shaft and slope	1	7	1	3	1	1,500	3	5	235	5	235	1	40	335	11	8
40. Forest City shaft	5	6								5	187	1	40	307	9	12
41. Forest City slope	2	1	1		1	800	5	4		2	62			62	2	4
42. Erie shaft	3	1	2	11	1	1,000	5	3	150	6	250	1	40	440	9	24
43. Glenwood shafts Nos. 1 and 2	4	2			1	1,500	3	9	350	6	355			670	15	10
44. Keystone tunnel	1	1			1	600	5			1	30			30	1	2
Totals	16	18	4	14	5	5,400	24	21	605	25	1,119	3	120	1,844	47	60
O. S. Johnson, Operator.																
45. Green Ridge slope	1		1	3	1	800	2	3	100	4	235			335	7	15
46. Lackawanna Coal Company's shaft		3	4		1	1,500	3	5	110	17	645			755	22	24
Totals		3	5		2	2,300	5	8	210	21	880			1,090	29	39
William Connell & Co.																
47. Meadow Brook shaft	2	2			1	800	2	5	190	4	312			502	9	17
48. Meadow Brook tunnel		1					2	0		1	15	1	35	50	2	1
49. National shaft		3				800	2	4	145	5	306			451	9	14
50. Stafford shaft	1	2			1		2	1	20	2	102	1	35	157	3	3
Totals	3	8			2	1,600	8	10	355	12	735	2	70	1,160	23	35
John Jermyn.																
51. Jermyn No. 3 shaft	1		1	2	1	1,000	3			6	290			290	6	12
52. Jermyn No. 4 shaft	5		2	2	1	1,000	3	6	175	14	600			775	20	21
Totals	6		3	4	2	2,000	5	6	175	20	890			1,065	26	33
Lackawanna Iron and Coal Company.																
53. Capouse shaft	1	4			2	1,500	3	4	116	6	640			575	10	15
54. Pine Brook shaft	1	4	1	0	1	1,500	3	4	321	9	698			1,019	13	4
Totals		8			3	3,000	6	8	437	15	1,339			1,776	23	19

*Coal prepared at Sloan & Hampton Collieries no report made this year. †Loading chute. ‡All data returned on D., L. & W. R. R. Co.'s Report for 1891.

TABLE II—*Continued.*

NAME OF COLLIERIES	Number of fatal accidents.	Number of non-fatal accidents.	Number of widows.	Number of orphans.	Number of coal breakers.	Capacity of breakers per day of 10 hours work.	Number of openings, shafts, slopes, tunnels and drifts.	Number of pumping engines and steam pumps.	Horse power of pumping engines and steam pumps.	Number of breaker, fan and hoisting engines.	Horse power of breaker, fan and hoisting engines.	Number of mine locomotives.	Horse power of mine locomotives.	Total horse power.	Total number of engines.	Number of boilers.
Simpson & Watkins.																
55. Edgerton drifts	2			3	1	1,200	5	1	5	5	175	2	50	230	8	8
56. Simpson slopes					1	1,100	3	13	225	13	425	3	120	770	29	22
Totals	2				2	2,300	8	14	230	18	600	5	170	1,000	37	30
Pennsylvania Coal Company.																
57. No. 1 shaft		1			1	1,000	3	2	145	6	60	1	33	238	9	14
58. No. 3 shaft Gypsy Grove							4	2	174	2	140			314	4	
59. No. 4 shaft Gypsy Grove		1			1	700	2			2	114			114	2	10
60. No. 5 shaft		1			1	1,000	2	2	79	4	335			414	6	10
Totals					3	2,700	11	6	398	14	649	1	33	1,080	21	34
Other Miscellaneous Coal Companies.																
61. Church slope					1	100	2	2	65	2	85			150	4	2
62. Providence Coal Company shaft					1	300	2	3	85	5	140			225	8	6
63. Clark tunnel					1	100	1			1	33			33	1	1
64. Dolph tunnel					1	600	1			4	200			200	4	5
65. Reese & Moseer drifts	2	4	1	1	1	300	2			1	25			25	1	3
66. Marshwood slope	1		1	6	1	1,500	3			3	162			162	3	6
67. Mount Jessup slope		4			1	600	4	6	110	6	185			295	12	13
68. Mount Pleasant shaft					1	900	3	5	90	7	563	1	92	745	13	14
69. Murray & Jackson shaft					1	100	2			2	30			30	2	1
70. Jones, Simpson & Co. shaft and drift					1	800	2	5	127	10	255	2	60	442	17	14
71. Grassy Island shaft and drift	3	2	3	6	1	700	6	4	46	4	220	1	50	316	9	15
72. Ontario shaft					1	1,000	3	4	80	6	300	1	25	405	11	17
73. Pierce slope and tunnel	3	8	2	5	1	900	6			5	240	2	50	290	7	12
74. Pancoast shaft		3			1	900	2	5	158	8	900			1,058	13	22
75. Rushbrook shaft					1	1,000	2	3	49	7	616	1	80	745	11	10

76. Riverside shaft,		2			1	900	2	2	50	4	340			390	6	6
77. Spencers shaft,					1	800	2	2	100	10	345			445	12	11
78. S. V. White shaft,					1	800	3			1	65	2	50	115	3	3
79. Tripp & Co. local coal sale,					1	150				1	15			15	1	
80. John Murrin local coal sale,					1	40				1	10			10	1	
81. Mill Creek local coal sale,					1	40				1	7			7	1	1
82. West Side Coal Company local coal sale,					1	100				1	25			25	1	1
83. Frisbis Coal Company local coal sale,					1	150				1	20			20	1	
84. W. M. Weeks local coal sale,																
85. Elk Hill Coal and Iron Company,					1	300	1	1	80	4	140	1	30	250	6	6
Totals,					24	13,080	51	42	1,040	95	4,921	11	437	6,398	148	169

Recapitulation.

Del., Lacka. and Western Railroad Company,					16	16,500	42	142	5,780	135	9,848	14	1,228	16,857	291	352
Delaware and Hudson Canal Company,					15	9,650	40	56	2,132	89	3,577	3	75	5,784	148	205
Hillside Coal and Iron Company,					5	5,400	24	21	605	25	1,119	3	120	1,844	47	60
O. S. Johnson,					2	2,300	5	8	210	21	880	3	120	1,090	29	39
William Connell & Co.,					2	1,600	8	10	355	12	735	2	70	1,160	23	35
John Jermyn,					2	2,000	5	6	175	20	890			1,065	26	33
Lackawanna Iron and Coal Company,					3	3,000	6	8	437	15	1,339			1,776	23	19
Simpson & Watkins,					2	2,300	8	14	230	18	600	5	170	1,000	37	30
Pennsylvania Coal Company,					3	2,700	11	6	398	14	642	1	33	1,080	21	34
Miscellaneous coal companies,					24	13,080	51	42	1,040	95	4,921	11	437	6,398	148	169
Four local coal sale mines,																
Grand totals,	69	215	29	92	74	58,530	190	313	11,362	444	24,558	42	2,286	38,087	793	976

TABLE II—*Continued.*

NAME OF COLLIERIES.	Date of last examination of boilers and steam gauges.	Condition of boilers when last examined.	Are steam gauges and safety valves in position so that engineers can see them?	Number of horses and mules.	Number of splits of air.	Number of persons working in air shaft.	Total number of persons working in mines.	VENTILATION. Number of cubic feet of air passing at intake.	Number of cubic feet of air passing at face of workings.	Number of cubic feet of air passing at outlet.
Delaware, Lackawanna and Western Railroad Company.										
1. Archbald shaft and slope	Dec. 4, 1891; Jan. 8, 1892	Good.	Yes.	75	6	281	331	144,380	133,824	145,529
2. Bellevue shaft	July and December 4, 1891	do.	do.	82	8	335	387	197,640	184,106	214,419
3. Bellevue slope										
4. Brisbin shaft	October and December 4, 1891	do.	do.	60	8	253	305	145,180	134,539	152,520
5. Continental shaft	October and December 4, 1891	do.	do.	63	8	218	309	121,850	105,415	150,660
6. Cayuga	Nov. and Dec. 4, 1891	do.	do.	55	4	165	276	61,800	60,500	62,100
7. Central shaft										
8. Dodge shaft	December 4, 1891	do.	do.	74	8	212	260	187,004	147,636	188,925
9. Hampton shaft	Nov. and Dec. 4, 1891	do.	do.	61	6	240	277	55,200	64,440	73,860
10. Hyde Park	December 4, 1891	do.	do.	62	6	212	255	100,395	88,652	102,680
11. Holden shaft	Sept. and Dec. 4, 1891	do.	do.	44	8	139	165	145,680	141,855	162,080
12. Manville shaft half time	October and December 4, 1891	do.	do.	27	3	177	184	85,710	81,750	94,750
13. Oxford shaft	Nov. and Dec. 4, 1891	do.	do.	84	8	240	282	148,930	145,082	156,165
14. Pyne shaft	August and December 4, 1891	do.	do.	61	8	228	283	124,086	102,169	128,311
15. Sloan	July and December 4, 1891	do.	do.	87	11	220	296	166,524	144,853	201,563
16. Storrs Nos. 1, 2 and 3	December 4, 1891	do.	do.	93	11	450	584	212,590	200,474	269,892
17. Tripp and Diamond No. 2 shaft	Sept. and Dec. 4, 1891	do.	do.	89	12	316	376	320,825	290,220	415,440
18. Taylor shaft and drift	August and December 4, 1891	do.	do.	79	5	288	300	185,345	174,110	223,490
Miscellaneous employes										
Totals				1,096	120	3,974	4,870			
Delaware and Hudson Canal Company.										
19. Clinton slope and drift	November 8, 1891	Good.	Yes.	17	3	129	165	57,730	49,975	58,920
20. Coal Brook tunnel	November 8, 1891	do.	do.	23	4	91	154	34,840	31,880	34,950
21. Midland tunnel	November 8, 1861	do.	do.	2	1	11				
22. Wilson Creek tunnel	November 8, 1891	do.	do.	29	4	188	252	67,250	58,450	80,875
23. Dickson shaft	September 27, 1891	do.	do.	36	8	209	320	141,980	133,870	135,344
24. Eddy Creek shaft	November 22, 1891	do.	do.	23	3	125	191	66,250	55,150	73,190
25. Grassy Island shaft	November 22, 1891	do.	do.	29	4	232	298	82,650	76,650	82,250
26. Jermyn No. 1 shaft	November 14, 1891	do.	do.	28	7	265	340	106,660	99,300	114,610
27. Leggett's Creek shaft	October 25, 1891	do.	do.	49	7	169	229	186,250	180,240	192,310
28. Marvin shaft	October 25, 1891	do.	do.	42	6	197	308	115,359	112,308	143,775

29. No. 1 shaft, Carbondale	November 14, 1891	do.	do.	10	2	53	76	17,440	17,120	19,740
30. No. 3 shaft, Carbondale	November 18, 1891	do.	do.	15	3	80	116	39,250	9,400	20,880
31. Olyphant No. 2 shaft	November 22, 1891	do.	do.	24	5	172	242	63,725	46,400	50,940
32. Powderly slope	November 14, 1891	do.	do.	25	5	153	211	68,877	59,308	71,478
33. Von Storch slope	26 October 25, 1891	do.	do.	26	4	139	189	70,000	64,000	80,810
34. Von Storch shaft, Clark vein	6 November 18, 1891	do.	do.	36	5	74	265	93,815	84,165	123,865
35. White Oak tunnels Nos. 3½ and 5	November 18, 1891	do.	do.	28	4	215	273	71,160	47,100	59,780
36. White Bridge tunnel				24	3	72	128	34,280	30,640	34,200
37. Manville shaft, half time †										
38. Rackett Brook breaker	November 8 1891			2			99			
Miscellaneous employes										
Totals				468	78	2,513	3,869			
Hillside Coal and Iron Company.										
39. Clifford shaft and slope	December, 1891	Good.	Yes.	16	3	170	170	39,420	80,440	79,300
40. Forest City shaft	December 1891	do.	do.	27	5	282	282	73,490	79,648	90,632
41. Forest City slope	December, 1891	do.	do.	12	4	149	149	34,783	38,482	51,352
42. Erie shaft	July, 1891	do.	do.	50	4	367	367	73,692	74,622	76,894
43. Glenwood shafts Nos. 1 and 2	July, 1891	do.	do.	36	4	306	306	72,420	112,080	117,330
44. Keystone tunnel	July, 1891	do.	No.	24	2	146	146	45,420	55,680	56,490
Totals				165	22	1,420	1,420			
O. S. Johnson, Operator.										
45. Green Ridge slope	September, 1891	Good.	Yes.	27	4	174	179	48,140	14,745	48,620
46. Lackawanna Coal Company shaft	October, 1891	do.	do.	57	5	328	413	93,700	68,740	94,340
Totals				84	9	502	592			
William Connell & Co.										
47. Meadow Brook shaft	September 30, 1891	Good.	Yes.	28	4	237	237	73,593	71,414	75,600
48. Meadow Brook tunnel	September 30, 1891	do.	do.	9	2	41	41	39,486	36,100	41,176
49. National shaft	September 30, 1891	do.	do.	13	4	133	133	69,894	66,704	71,456
50. Stafford shaft	September 30, 1891	do.	do.	5	2	64	64	39,825	38,976	40,320
Totals				55		475	475			
John Jermyn.										
51. Jermyn No. 3 shaft	October 26, 1891	Good.	Yes.	35	5	186	240	62,220	50,387	72,568
52. Jermyn No. 4 shaft	Oct. 4 and Dec. 10, 1891	do.	do.	25	7	214	236	110,693	87,370	111,380
Totals				60	12	400	476			
Lackawanna Iron and Coal Company.										
53. Capouse shaft	October 1, 1891	Good.	Yes.	85	8	223	408	220,800	181,700	232,040
54. Pine Brook shaft	October 1, 1891	do.	do.	77	8	403	423	219,135	207,876	227,044
Totals				162	16	626	831			

*Coal prepared at Sloan & Hampton collieries; no report made this year. †All data returned on D., L. & W. R. R. Co.'s report for 1891. ‡Robbing pillars.

TABLE II—*Continued.*

NAME OF COLLIERIES.	Date of last examination of boilers and steam gauges.	Condition of boilers when last examined.	Are steam gauges and safety valves in position so that engineers can see them?	Number of horses and mules.	Number of splits of air.	Number of persons working in air splits.	Total number of persons working in mines.	VENTILATION. Number of cubic feet of air passing at intake.	Number of cubic feet of air passing at face of workings.	Number of cubic feet of air passing at outlet.
Simpson & Watkins.										
55. Edgerton drifts	December 31, 1891	Good.	Yes.	31	5	247	259	76,400	45,470	76,840
56. Simpson slopes	November, 1891	do.	do.	50	6	280	293	63,700	56,240	64,960
Totals					11	527	552			
Pennsylvania Coal Company.										
57. No. 1 shaft		Good.	Yes.	16		152	152	54,866	39,988	55,747
58. No. 3 shaft, Gypsy Grove	November 14, 1891	do	do.	9	2	117	117	27,540	22,580	32,044
59. No. 4 shaft, Gypsy Grove	November 14, 1891	do.	do.	9	2	138	138	34,424	28,544	42,116
60. No. 5 shaft	November 8, 1891	do.	do.	29	8	265	265	108,100	69,980	108,900
Totals				63	15	672	672			
Other Miscellaneous Coal Companies.										
61. Church slope	December, 1891	Fair.	Yes.	11	1	20	22	8,000	2,560	8,400
62. Providence Coal Company shaft	September, 1891	Good.	do.	25	2	110	143	29,200	16,820	30,720
63. Clark tunnel	August, 1891	do.	do.	6	1	6	6	7,200	2,800	7,900
64. Dolph tunnel	September 18, 1891	do.	do.	30	3	120	135	48,100	40,500	50,840
65. Reese & Moseer drifts		do.	do.	17	1	75	75			
66. Marshwood slope	November 13, 1891	do.	do.	25	1	73	89	47,500	20,200	48,980
67. Mount Jessup slope	November 26, 1891	do.	do.	30	3	125	152	55,220	33,710	64,870
68. Mount Pleasant shaft	December 12, 1891	do.	do.	43	7	293	299	110,340	89,745	114,780
69. Murray & Jackson shaft	September, 1891	do.	do.	7	1	18	29	21,400	16,200	24,300
70. Jones, Simpson & Co. shaft and drift	November, 1891	do.	do.	32	5	334	465	102,640	92,400	116,250
71. Grassy Island shaft and drift	December 18, 1891	do.	do.	17	5	2	2	83,650	46,704	94,240
72. Ontario shaft	September, 1891	do.	do.	26	3	217	222	79,300	52,860	81,100
73. Pierce slope and tunnel	November and December, 1891	do.	do.	27	2	130	136	40,000		65,000
74. Pancoast shaft	October, 1891	do.	do.	49	6	297	309	98,960	82,670	97,760
75. Rushbrook shaft	December 20, 1891	do.	do.	10	1 2	29 14	29 14	35,000 14,000	25,650 11,000	36,500 15,100
76. Riverside shaft	November 1, 1891	do.	do.	7	1	36	40	17,210	17,010	17,420
77. Spencer's shaft	September 1, 1891	do.	do.	36	3	216	221	47,120	46,340	47,720

78. S. V. White	August 15, 1891	do.	do.	16	4	90	117	21,800	31,350	45,650
79. Tripp & Co. local coal sale	Gets steam from Tripp shaft.									
80. John Murrin local coal sale	October, 1891			4	1	7	7			
81. Mill Creek local coal sale	December, 1891	do.	do.	2	1	8	11			
82. West Side Coal Company local coal sale	September (new), 1891	do.	do.	2	1	16	23			
83. Frisbis Coal Company local coal sale										
84. W. M. Weeks local coal sale										
85. Elk Hill Coal and Iron Company		do.	do.	10	2	84	84			
Totals				432	56	2,320	2,630			

Recapitulation.

Delaware, Lackawanna and Western Railroad Company			1,096	120	3,974				
Delaware and Hudson Canal Company			468	78	2,513				
Hillside Coal and Iron Company			165	22	1,420				
O. S. Johnson			84	9	502				
William Connell & Co.			55	12	475				
John Jermyn			60	12	400				
Lackawanna Iron and Coal Company			162	16	626				
Simpson & Watkins			81	11	527				
Pennsylvania Coal Company			63	15	672				
Miscellaneous coal companies			432	56	2,320				
Four local coal sale mines			10	4	26				
Grand totals			2,676	351	13,455				

TABLE III—*Showing the Number of each class of Employes at each Colliery in the First and Second Anthracite Districts, during the year 1891.*

NAMES OF COLLIERIES.	NAMES OF PERSONS EMPLOYED INSIDE.							NAMES OF PERSONS EMPLOYED OUTSIDE.							Grand total inside and outside.	Names of mine foremen.	Names of outside foremen.
	Inside foremen.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside.			
Delaware, Lackawanna and Western Railroad Company.																	
Archbald colliery	1	119	119	35	46	11	331	2	7	7	102	55	1	174	505	J. D. Lloyd	J. Fern, W. H. Fern.
Bellevue shaft colliery	1	97	100	22	45	8	273	2	5	10	100	56	1	174	561	J. Hale	B. C. Green.
Bellevue slope colliery	1	38	37	15	14	9	114									D. Z. Davis	H. E. Ressinger.
Brisbin colliery	1	104	115	31	45	9	305	1	4	10	93	42	1	151	456	F. Zimmerman	E. H. Evans.
Continental colliery	1	103	100	44	47	14	309	1	7	9	94	49	...	160	469	R. H. Williams	J. F. Green.
Cayuga colliery	1	95	95	32	50	3	276	1	7	9	90	35	1	143	419	J. P. Morgan	G. Decker.
Dodge colliery	1	93	93	27	37	9	260	1	6	9	63	44	1	124	384	E. James	W. Beachman.
Hampton colliery	1	102	98	24	39	13	277	1	5	8	83	48	1	146	423	E. Dagger	J. H. Hoffman.
Hyde Park colliery	1	84	84	36	41	9	255	1	6	8	54	41	1	111	366	D. W. Moser	S. M. Ives.
Holden colliery	1	57	57	19	24	7	165	1	5	5	45	20	1	77	242	E. J. Evans	H. A. Filmore.
Manville, half time, colliery	1	70	70	15	23	5	184	1	3	10	43	35	1	93	277	D. S. Evans	J. L. Atherton.
Oxford colliery	1	91	94	37	37	22	282	1	4	11	68	35	2	121	403	R. A. Phillips	W. B. Thornton.
Pyne colliery	1	104	100	33	36	9	283	1	5	7	75	35	1	124	407	J. M. Thomas	A. Reinhardt.
Sloan colliery	2	94	104	46	34	16	296	1	9	20	71	72	1	174	470	L. Roberts, H. P. Daves	F. Peters.
Storr's Nos. 1 and 2 colliery	2	167	169	54	60	21	473	1	7	21	80	78	...	187	660	T. Carson, R. Evans	J. C. Bowman.
Storr's No. 3 mine	1	37	37	25	9	2	111	...	...	...	...	...	...	...	111	S. Lewis	do.
Tripp colliery	1	105	112	30	33	20	301	1	7	21	70	64	1	164	465	J. A. Evans	W. S. Langstaff.
No. 2 shaft, Diamond colliery	1	20	35	10	6	3	75	...	...	...	...	...	...	...	75	W. R. Evens	do.
Taylor mine	2	104	108	28	38	20	300	1	7	12	80	48	1	149	449	J. R. Johns, H. E. Harris	H. J. Cooper.
Miscellaneous employes.*	...	...	...	...	...	...	...	...	...	...	...	...	...	215	215		
Totals	22	1,684	1,727	563	664	210	4,870	18	94	177	1,211	757	15	2,487	7,357		

* Masons, carpenters, surveyors, etc.

Delaware and Hudson Canal Company.																	
Clinton slope and drift colliery.	1	71	58	18	17	3	168	1	2	4	40	35	1	83	251	W. Bryden.	H. Carter.
Coal Brook tunnel colliery.	1	63	28	21	36	6	155								155	W. McMyne.	
Midland tunnel colliery.	1	6	3		2		12	1	8	8	90	80	1	188	200	W. Dunstan.	R. Carter.
Wilson Creek tunnel colliery.		114	74	20	35	9	252								252		
Dickson shaft colliery.	1	115	94	34	67	10	321	1	4	9	54	52	2	122	443	A. Arkman.	W. Richmond.
Eddy Creek shaft colliery.	2	100	40	20	27	4	193	1	5	8	53	41	1	109	302	W. H. Davis. M. Gray.	B. E. Kengsley.
Grassy Island shaft colliery.	1	119	60	40	64	15	299	1	4	17	61	39	1	123	422	D. E. Lewis.	J. G. Bell.
Jermyn No. 1 shaft colliery.	1	205	45	26	49	15	341	1	5	9	43	42		100	441	J. Tennis.	T. Hunter.
	8	793	402	179	297	62	1,741	6	28	55	341	289	6	725	2,466		
Miscellaneous employes,*														100	100		
Leggett's Creek shaft colliery.	1	104	48	27	42	8	230	1	7	9	71	58	2	148	378	F. Ross.	G. W. Wilder.
Marvine shaft colliery.	1	109	88	25	71	15	309	1	6	12	55	45		119	428	A. Smith.	G. Griffin.
Manville shaft 6½†																	
No. 1, shaft Carbondale.	1	26	17	14	15	4	77								77	J. Scott.	
No. 3, shaft Carbondale.	1	53	27	12	20	4	117	1	2	7	7	11		28	145	M. Thomas.	T. Coogan.
Olyphant No. 2 colliery.	1	86	86	20	40	10	243	1	4	12	47	39	1	104	347	A. Frew.	J. T. Money.
Rackett Brook breaker.								1		2	60	35	2	100	100		J. Loftus.
Powderly slope colliery.	1	140	11	17	36	7	212	1	4	7	7	19		38	250	T. Jordan.	S. Crocker.
Von Storch diamond rock and 14 feet veins.	1	79	60	15	30	5	190	1	8	16	50	74	2	151	190 151	M. Loftus.	C. W. Zeigler.
Von Storch Clark vein shaft.	1	85	81	24	67	8	266								266	E. D. Jones.	
White Oak No. 3½ tunnel.	1	21	18	6	16	1	63	1	4	4	76	42	1	128	63 128	J. Nicol.	T. Law.
White Oak No. 5 tunnel.	1	90	76	17	22	6	212								212	J. J. Kearney.	
White Bridge tunnel.	1	54	28	13	30	3	129	1	2	3	7	35		48	177	J. Waterfield.	M. Campbell.
Totals.	11	847	540	190	389	71	2,048	9	37	72	380	358	8	964	3,012		
Delaware and Hudson Canal Company, grand totals.	19	1,640	942	369	686	133	3,789	15	65	127	721	647	14	1,689	5,478		
William Connell & Co.																	
Meadow Brook shaft colliery.	1	108	62	19	34	13	237	1	7	7	69	23	3	101	338	S. T. Jones.	M. L. Coyne.
Meadow Brook tunnel colliery.	1	12	14	4	8	2	41					2		4	45	do.	do.
National shaft colliery.	1	61	24	19	22	6	133	1	3	8	70	21	3	106	239	E. T. Morgan.	F. Sleppy.
Stafford shaft colliery.	1	26	26	3	6	2	64		1	4		3		8	72	do.	do.
Totals.	4	207	126	45	70	23	475	2	11	21	139	49	6	219	694		
Hillside Coal and Iron Company.																	
Clifford shaft colliery.	1	87	41	16	22	3	170	1	5	7	35	37	2	87	257	J. White.	J. J. Alken.
Forest City shaft colliery.	1	116	86	43	31	5	282	1	4	8	40	68	4	125	407	B. Maxey.	J. F. Gallagher.
Forest City slope colliery.	1	77	48	7	12	4	149	1	3	3		2		9	158	G. Maxey.	
Erie shaft colliery.	1	130	120	35	73	8	367	1	8	12	55	48	5	129	496	M. Barbour.	J. J. Walker.
Glenwood shaft colliery.	2	120	100	30	40	14	306	1	9	11	92	61	2	176	482	M. M. Walsh. C. Davis.	R. Kerwin.
Keystone tunnel colliery.	1	70	30	16	26	3	146	1	2	2	28	28	1	62	208	W. J. Glennon.	W. Bergen.
Totals.	7	600	425	147	204	37	1,420	6	31	43	250	244	14	588	2,008		

*Machinists, 27; moulders, 10; carpenters, 22; masons, 16; surveyors, 10; supts. and clerks, 15. † All employes returned on Del., Lacka. and Western Railroad Co. sheet.

TABLE III—*Continued.*

NAMES OF COLLIERIES.	NAMES OF PERSONS EMPLOYED INSIDE.							NAMES OF PERSONS EMPLOYED OUTSIDE.							Grand total inside and outside.	Names of mine foremen.	Names of outside foremen.
	Inside foremen.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside.			
Miscellaneous Coal Companies.																	
Green Ridge slope colliery	1	60	50	22	39	7	179	1	4	3	32	27	2	69	248	R. Martin	W. S. Boyd.
Lackawanna Coal Co. shaft	1	145	145	36	74	12	413	1	6	12	99	38	2	158	571	J. Berkheser	W. Harper.
Jermyn No. 3 slope	1	130	130	26	65	21	373	1	4	6	70	35	4	120	493	S. W. Minarec	W. E. Merritt.
Jermyn No. 4 shaft	1	83	68	32	48	7	239	1	6	9	55	35	3	109	348	J. F. O'Hara	W. Priest.
Capouse shaft colliery	2	133	127	53	60	33	408	1	11	6	100	29	1	148	556	W. P. Morgan	D. J. Bevens.
Pine Brook shaft colliery	2	126	112	63	74	46	423	1	7	8	79	58	2	155	578	J. H. Powell	H. Hess.
Edgerton tunnels colliery	3	95	105	16	35	5	259	2	6	6	67	60	5	146	405	J. Mareon, E. E. Reynolds,	J. G. Shepherd.
Simpson slopes colliery	3	125	100	19	35	11	293	1	6	7	57	40	6	117	410	J. White, W. Brown,	J. Boyle.
Church slope colliery	1	8	8	3	2		22			3	4	8	1	16	38	J. J. Gibbons	W. Dolphin
Providence shaft colliery	1	75	15	20	28	4	143	1	4	2	25	15	2	54	197	do.	do.
Clark tunnel colliery		3	2		1		6	1		3			2	6	12	J. Flynn	J. Flynn.
Dolph drift colliery	1	52	40	7	33	2	135	1	4	4	66	25	2	102	237	J. W. Smith	A. Craig.
Marshwood slope colliery	2	30	30	8	14	5	89	1	4	4	35	6	4	54	143	G. P. Davis	N. Nolhstine.
Mount Jessup slope colliery	1	63	53	15	18	2	152	2	9	7	50	27	4	99	251	H. Chapman	O. M. Bittler.
Mount Pleasant shaft colliery	2	100	100	31	48	18	299	1	6	5	107	50	3	172	471	J. Von Bergen	T. Sprague.
Murray & Jackson's colliery	1	5	5	2	6		19	1		1	5	3		10	29	M. J. Murray	J. Carney.
Jones, Simpson & Co. colliery	2	175	100	11	28	18	354	1	6	11	68	44	3	133	467	D. Williams	D. J. Gilmartin.
Grassy Island shaft colliery	1			1			2		2	3		13	2	20	22	D. Dorris.	
Ontario shaft No. 1 colliery	1	84	84	28	20	5	222	1	4	7	47	31	2	92	314	A. Gillaspie	R. J. Urell.
Pierce tunnel and drift colliery	1	50	60	10	14	1	136	1	5	8	35	25	2	76	212	T. F. Battle	E. Taylor.
Pancoast shaft colliery	2	110	100	41	48	8	309	1	7	10	44	40	3	105	414	J. V. Butley, J. Indian, asst.	E. Banfield.
Rushbrook shaft colliery	1	28	24	11	5	1	70	1	4	8	32	15	2	62	132	T. Laugan	W. C. Warner.
Riverside shaft colliery	1	12	20	5	2		40	1	2	3	22	15	1	44	84	T. J. Williams	M. Caroley.
Spencer shaft colliery	1	72	72	22	37	17	221	2	2	7	40	53	1	105	326	P. H. Morgan	A. D. Spencer.
S. V. White tunnel colliery	1	41	40	5	25	5	117	1	3	5	45	20	1	75	192	R. R. Griffiths	A. S. Hartman.
Tripp & Co., local sale											19	13	1	33	33		
John Murvin, local coal sale mine		2	2	2	1		7					2	1	3	10		
Mill Creek		3	3		1	1	8			1	2			3	11	H. P. Williams	
West Side Coal Company	1	6	7		2		16			1	3	2		6	22	J. F. Nicholson	

Ontario No. 2.	1	32	15	4	10	3	65	1	2	3	30	21		59	124	W. W. Watkins.		
Four local coal sale mines.	..	20	2	....	4	...	26	..	...	...	4	4	1	9	35			
	36	1,868	1,619	493	777	232	5,025	27	114	158	1,242	754	65	2,360	7,385			
Pennsylvania Coal Company.																		
No. 1 shaft.	1	69	57	10	15	8	160	1	2	8	25	26	...	62	222	T. R. Young.	J. Masters.	
No. 3 shaft.	..	67	45	5	17	3	138	..	1	5	32	32	...	71	209	T. Prothroe.	do.	
No. 4 shaft.	1	48	44	4	14	5	115	1	1	2	....	3	...	6	121	J. W. Reed.	C. Moffat.	
No. 5 shaft.	1	110	102	18	34	14	279	1	3	6	64	37	...	111	390			
Bunker Hill breaker.	..	....	....	....	....	....	....	....	....	2	....	25	...	27	27			
Totals.	3	294	248	37	80	30	692	3	7	23	121	123	...	277	969			
Grand totals.	91	6,293	5,087	1,654	2,481	665	16,271	71	322	549	3,675	2,574	114	7,620	23,891			

TABLE IV.—*List of Fatal Accidents occurring in the Mines of the First and Second Anthracite Districts for the year ending December 31, 1891.*

Date of accident	NAME OF PERSON INJURED.	Age.	Married or single.	No. of orphans.	Name of Colliery.	Location—County.	Nature and Cause of Accident in Brief.
Jan. 13.	John Conacco.	19	.	.	No. 2 shaft, Forest City.	Susquehanna,	Seriously injured; head fractured; was riding on bumper of car and fell off and was dragged about forty feet; died same night.
17.	Patrick Murray.	.	.	.	No. 4 drift, Edgerton.	Lackawanna,	Seriously injured; slipped off bumper of car which ran over his arm crushing it very badly; it was amputated; he died 19th inst.
21.	Michael Kremeskie.	36	1	5	Highland Park drift.	do.	Killed by a fall of roof. "bell-shaped."
30.	Stephen Hockety.	30	.	.	Glenwood shaft.	do.	Killed by a fall of roof.
Feb. 3.	William Warlett.	35	1	4	Storrs shaft.	do.	Seriously injured; premature explosion of a blast; died next morning.
7.	George Palmer.	15	.	.	Jermyn No. 4 shaft.	do.	Fell off carriage from 14 foot vein to bottom.
7.	Elias Hoffman.	45	1	0	Pine Brook shaft.	do.	Burned badly by explosion of gas; died next morning.
17.	Richard Ham.	42	0	0	No. 2 shaft, Forest City.	Susquehanna,	Seriously injured in the morning by a fall of "rock saddle;" died at 2.30 p. m.
20.	John Snyder.	25	0	0	No. 2 shaft, Forest City.	do.	Run over by loaded mine car; died next day.
25.	Robert Patton.	45	1	0	Pancoast shaft.	Lackawanna,	Killed; fall of roof.
Mar. 19.	Mike Undike.	22	.	.	Holden shaft.	do.	Died; stumbled and fell off safety carriage from New County to Clark vein.
25.	James Lewis.	21	.	.	Bellevue shaft.	do.	Killed; fall of bony coal while cleaning track.
27.	Joseph Hamilton.	21	.	.	Pancoast shaft.	do.	Killed; fall of top coal; was warned to keep away.
29.	Joseph McCormick.	22	.	.	Grassy Island boiler house.	do.	Killed; boiler exploded at 11.20 o'clock Sunday night.
April 4.	Wm. Murphy.	43	1	3	Archbald shaft.	do.	Killed instantly; fall of top coal.
7.	Harry Cornell.	14	.	.	Diamond shaft.	do.	Leg and foot crushed; caught between bumpers of cars; died next day.
9.	Mike Cantor.	21	.	.	No. 2 shaft, Forest City.	Susquehanna,	Seriously injured; fall of roof in old cross cut; died April 12.
24.	Thomas R. Cawley.	15	.	.	Hyde Park shaft.	Lackawanna,	Seriously injured; caught between two cars; was injured at 11 o'clock p. m.; died next morning.
27.	Martin Commons.	50	.	.	Jermyn No. 4 shaft.	do.	Killed instantly; a rock bell fell on him.
May 6.	John Hart.	14	.	.	Dickson breaker.	do.	Killed instantly; clothes caught on shaft in breaker.
7.	Francis Carll.	48	1	0	Forest City slope.	Susquehanna,	Killed instantly; fall of rock.
7.	Ebenezer Hunter.	40	1	6	Mount Jessup slope.	Lackawanna,	Killed instantly by runaway trip of cars on main slope.
15.	John Ludgate.	50	1	.	Taylor shaft mines.	do.	Killed; had blast in top coal, thought it missed fire and went back and as he got to the hole it exploded with above result.
26.	George Rawson.	51	1	.	Jermyn No. 4 shaft mines.	do.	Found dead in part of old working where steam exhausts.
June 4.	James Flynn.	27	.	.	Storrs shaft mines.	do.	Killed; fall of top coal.
10.	James Langan.	25	.	.	Ontario shaft No. 2 mines.	do.	Killed instantly; fall of fire clay roof.
20.	Henry McCleary.	40	.	.	Olyphant No. 2 mines.	do.	Died July 10; was in the act of tamping a hole to fire a blast, when blast exploded, seriously injuring McCleary.
July 7.	John Wargo.	30	1	2	Clifford shaft, Forest City.	Susquehanna,	Killed; fall of rock.

8,	Isaac Reese,	57	.	.	Ontario shaft mines,	Lackawanna.	Seriously injured; fall of fire clay roof; died on his way home.
8,	John Miller,	21	.	.	Capouse shaft,	do.	Killed instantly; fall of rock roof.
14,	William O'Hara,	17	.	.	Jermyn No. 4, culm dump,	do.	Killed; struck by a culm car on culm dump.
15,	James Cannon,	24	.	.	Von Storch 14 foot vein,	do.	Seriously injured; fall of roof; died same day.
18,	Thomas Meehan,	48	1	4	White Bridge tunnel,	do.	Killed; found dead in chamber under a fall of roof.
28,	M. J. Dougherty,	41	.	.	Keystone breaker,	do.	Seriously injured; struck on head by a tie thrown from top of trestle; died same night.
30,	John Jenkins,	20	.	.	Glenwood shaft mines,	do.	Killed; fall of roof. [after.
30,	William Anguin,	15	.	.	Shaft No. 1, P. C. C. mines,	do.	Seriously injured; squeezed between mule and car; died two days
Aug. 14,	John Cusick,	30	.	.	Taylor shaft mines,	do.	Killed by a fall of rock while in the act of restanding a prop.
19,	Ambrose R. Parfrey,	15½	.	.	Pancoast breaker,	do.	Died; foot caught in frog, large railroad cars run over him; died seven hours after.
22,	Thomas Hughes,	26	1	1	Jermyn No. 4 shaft mines,	do.	Seriously burned by an explosion of CH_4 gas; died shortly after.
Sept. 4,	John Nolan,	22	1	1	Dolph drift mines,	do.	Killed; fall of roof. [morning.
10,	John E. Griffiths,	48	1	12	Lackawanna shaft mines,	do.	Seriously injured; fall of top coal and bony; died at 2 o'clock next
16,	Mike Powell,	35	.	.	No. 2 shaft, Forest City mines,	Susquehanna.	Killed; fall of rock saddle in roof. [of shaft.
16,	Patrick McQuaid	33	1	3	Ontario No. 2 shaft mines,	Lackawanna.	Killed; platform he was working on gave way and he fell to bottom
21,	James Horan,	36	1	7	Cayuga shaft mines,	do.	Killed; these three men were working together and after firing a
21,	Thomas Copjener,	27	1	2	Cayuga shaft mines,	do.	blast in the airway they waited for some time, then went back,
21,	Charles Codiz,	24	.	.	Cayuga shaft mines,	do.	when the roof fell and killed them.
24,	Edward Morris,	35	1	4	Elk Hill shaft mines,	do.	Killed; fall of top rock.
26,	Martin Ryan,	18	.	.	Stafford shaft mines,	do.	Back seriously injured; fall of rock; died on night of 28th.
29,	Peter Elostich,	20	.	.	Erie shaft mines,	do.	Killed; fall of rock.
29,	Henry Howells,	16	.	.	Pyne shaft mines,	do.	He was riding on his mule when a spark from his lamp fell on his clothes setting them on fire, burning him to death.
30,	John Mackelomis,	40	.	.	Brisbin shaft mines,	do.	Killed; caught by loaded trip of cars on plane.
Oct. 1,	David Evans,	16	.	.	Diamond shaft mines,	do.	Foot caught in latch, cars ran on it; died October 9.
6,	John Barry,	45	1	9	Erie shaft mines,	do.	Killed; fall of rock and buck.
6,	Dennis Munley,	28	1	.	Storrs No. 3 shaft mines,	do.	Killed; fell down shaft from 14 foot to Clark vein, distance 100 feet.
9,	John Walsh,	30	1	2	Grassy Island shaft mines,	do.	Killed; fall of rock roof.
10,	Phillip John Reese,	24	.	.	Continental shaft mines,	do.	Killed; fall of bony coal.
12,	Joseph Mattice,	33	1	3	Green Ridge slope mines,	do.	Killed; fall of rock roof.
14,	William Rowett,	24	1	1	Lackawanna C. C. shaft mines,	do.	Seriously injured; fall of coal; died on 17th, 2 o'clock p. m.
28,	William W. Watkins,	55	1	11	Taylor shaft mines,	do.	Killed; jumped on hoisting carriage at foot of shaft after signal was given.
30,	Martin J. Burns,	15	.	.	Meadow Brook mines,	do.	Fell in front of loaded car; died October 31.
Nov. 3,	Godfrey Knott,	60	1	4	Marvine shaft mines,	do.	Killed; run over by loaded trip of cars on plane No. 2.
6,	Michael Gourbolic,	45	1	2	Erie shaft mines,	do.	Killed; fall of rock.
24,	Michael Noglett,	35	1	.	Lackawanna C. C. shaft mines,	do.	Seriously injured; fall of bell from roof; died three hours after.
Dec. 17,	Edward Muldowney,	37	1	4	Manville shaft mines,	do.	Killed; fall of top rock; these men were working together.
17,	Hugh Riley,	27	0	2	Manville shaft mines,	do.	
9,	John Davidson,	45	.	.	Legget's Creek shaft mines,	do.	Badly burned by an explosion of powder while making a cartridge; died on the 17th.
22,	Mike Budner,	28	.	.	Lackawanna Coal Co., Limited,	do.	Killed; a piece of rock fell on his head.
29,	Anthony Boshepske,	26	.	.	No. 2 shaft, Forest City,	Susquehanna.	Killed; thought a blast missed fire, went back and got shot.
30,	John Bock,	33	1	2	Jermyn No. 3 mines,	Lackawanna.	Fired a blast which knocked out some props, when he went back roof fell on him killing him instantly.

Falls of roof	32,	equal to 46.38	per cent.
Falls of coal,	5,	equal to 7.24	per cent.
Caught by cars in mines,	13,	equal to 18.84	per cent.
Explosion of CH_4 gas,	2,	equal to 2.90	per cent.
Blasting and powder explosions,	5,	equal to 7.24	per cent.
Caught by cars outside,	2,	equal to 2.90	per cent.
Killed in breakers,	1,	equal to 1.50	per cent.
Boiler explosions,	1,	equal to 1.50	per cent.
Falling down shafts,	6,	equal to 2.90	per cent.
Miscellaneous,	6,	equal to 8.60	per cent.
	69,	equal to 100.00	

There were 69 deaths, 29 widows and 92 orphans.

TABLE V.—*List of Non-fatal Accidents occurring in the Mines of the First and Second Anthracite Districts for the year ending December 31, 1891.*

Date of accident.	NAME OF PERSON INJURED.	Age.	No. of mine district.	Name of Colliery.	Location—County.	Nature and Cause of Accident in Brief.
Jan. 3.	Jonah Davis,	15	..	Bellevue slope mine,	Lackawanna,	Ankle broken ; foot caught on rail while riding on bumper of car.
5.	Thomas Fadden,	16	..	Eddy Creek shaft mine,	do.	Leg fractured ; also severe flesh wounds ; fell under mine car.
5.	John McCabe,	39	..	Pine Brook shaft mine,	do.	Hips slightly injured ; premature explosion of a blast.
5.	Thomas Framaguskey,	28	..	Marshwood slope mine,	do.	Leg fractured in two places ; fall of rock roof.
6.	Thomas Mullin,	15	..	Spencer's shaft mine,	do.	Hip dislocated ; car run on him while trying to sprag it.
7.	John Sullivan,	16	..	Pyne shaft mine,	do.	Ankle sprained ; run over by mine car.
8.	Peter Ambersavage,	16	..	Pancoast shaft mine,	do.	Arm fractured ; fell under mine car ; it ran over h's arm.
8.	John H. Roberts,	58	..	Brisbin shaft mine,	do.	Thumb cut off ; fell on track.
8.	Michael Mulasky,	23	..	Bellevue slope mine,	do.	Slightly injured ; a piece of coal fell from a car on him.
8.	Daniel Morgan,	17	..	Oxford shaft mine,	do.	Jaw bone cracked and teeth loosened ; kicked by a mule.
9.	Griff Lewis,	15	..	Providence C. Co. shaft mine,	do.	Head squeezed between car and rib.
16.	Frank Kepp,	36	..	Hyde Park shaft mine,	do.	Head and shoulders slightly injured ; small piece of rock fell on him.
16.	William Greggs,	35	..	Pierce slope and drift mine,	do.	Foot dislocated ; fall of top coal.
16.	Samuel Morgan,	35	..	Mount Pleasant shaft mine,	do.	Severe flesh wound on head ; premature explosion of a blast.
19	Lewis Williams,	45	..	Taylor shaft mine,	do.	Slightly injured ; a piece of coal fell from a car and struck him on the hip.
19.	Martin C. Kelly,	45	..	Meadow Brook shaft mine,	do.	Injured slightly ; fall of top coal.
21.	James Moran,	50	..	Sloan shaft mine,	do.	Leg fractured ; fall of top and bony coal.
21.	Timothy Morrison,	16	..	Clifford shaft mine,	Susquehanna,	Eye badly burned ; another boy stuck his lamp into it.
22.	Leo Vaness,	39	..	Shaft No. 5, P. C. Co., shaft mine,	Lackawanna,	Leg fractured ; fall of roof.
23.	Patrick Maloney,	..	..	VonStorch Clark vein mine,	do.	Leg slightly injured by a piece of coal.
23.	Samuel Kennedy,	15	..	Bellevue slope mine,	do.	Fell and fractured his arm.
26.	Patrick Mullin,	23	..	Grassy Island shaft mine,	do.	Fore finger of right hand cut off ; a piece of coal fell on it.
27.	Charles Forkel,	27	..	Erie shaft mine,	do.	Head slightly injured ; fall of bony coal.
29.	William Rodman,	16	..	Clifford shaft mine,	Susquehanna,	One of his fingers injured ; caught by trace hook on harness.
30.	Thomas Manes,	24	..	Glenwood shaft mine,	Lackawanna,	Arm fractured ; fall of roof.
Feb. 2.	Patrick Moran,	58	..	Storr's shaft mine,	do.	Slightly injured ; struck by gate at head of shaft.
2.	Aaron Evans,	17	.	Holden shaft mine,	do.	Left hand cut off ; right arm fractured ; run over by two loaded cars in mine.
2.	James Winston,	35		Rushbrook shaft mine,	do.	Back slightly injured ; a piece of coal fell on it.
7.	Patrick McNeallis,	51	..	Simpson slope mine,	do.	Three toes cut off ; caught by a small piece of rock falling on them.
7.	Charles Richards,	18	..	Bellevue slope mines,	do.	Kicked in the face by a mule, while in the act of picking up the stretcher.
7.	George L. Jones,	42		Pine Brook shaft mine,	do.	Slightly burned by an explosion of gas.

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March	3.	Michael Dougherty.			Grassy Island slope mine.	do.	Leg fractured ; was working on safety carriage in shaft when it dropped from fifteen to eighteen feet.
	3.	Joseph Strink.	17		National shaft mine.	do.	Foot injured ; slipped and fell in front of an empty car.
	3.	Patrick Barrett.	16		Green Ridge slope mine.	do.	Injured ; his foot was caught between bumpers of cars.
	3.	Michael Carney.	23		Wilson Creek tunnel mine.	do.	Leg and arm slightly injured ; fall of roof.
	4.	James Bell.	46		Lackawanna C. Co. shaft mine.	do.	Leg fractured below the knee ; fall of rock roof.
	7.	William Reap.	15		Continental shaft mine.	do.	Face slightly burned ; he exploded powder that he was handling.
	9	Ed. Edwards.	16		Bellevue slope mine.	do.	Badly squeezed between door post and trip of cars.
	12.	Winton Woodward.	21		Mount Pleasant shaft mine.	do.	Three ribs broken and internally injured ; caught between cars.
	14.	Martin McHale.	17		Pancoast shaft mine.	do.	Arm fractured ; car run on it on the culm dump.
	23.	Patrick Flemming.	55		Ontario No. 1 shaft mine.	do.	Slightly injured ; run on by loaded mine car.
	27.	Thomas Greeley.	27		Storr's shaft mine.	do.	Leg fractured by flying coal from blast.
	28.	Neil McDonnell.	30		Manville shaft mine.	do.	Neck and arm slightly burned : explosion of gas.
April	1.	George Richardson.	16		Pancoast shaft mine.	do.	Right leg fractured and otherwise injured; runaway car in chamber.
	2.	John Gavin.	16		Diamond shaft mine.	do.	Slightly injured ; kicked on the face by a mule.
	4.	Patrick Ruane.	38		Providence C. Co. shaft mine.	do.	Leg fractured ; fall of rock.
	6.	George Houston.	19		Erie shaft mine.	do.	Two small toes mashed ; fall of fourteen inch coal.
	10.	Peter Cleary.	34		Sloan shaft mine.	do.	Leg severely injured ; fall of rock.
	14.	Philip Mazey.	23		Capouse shaft mine.	do.	Severely squeezed between hoisting carriage and buntons in shaft.
	16.	John Fowler.	34		Cayuga shaft mine.	do.	Leg broken and otherwise injured : fell from a bucket in shaft, a distance of eighteen feet.
	17.	John J. Davis.	15		Sloan shaft mine.	do.	Leg severely bruised ; fell off bumper in front of car.
	17.	James Luty.	24		Jermyn No 1 shaft mine.	do.	Collar bone broken : was riding on loaded trip and caught between cars.
	20.	Anthony Hayce.	28		National shaft mine.	do.	Face and hands slightly burned ; cartridge exploded while forcing it into a hole.
	28.	James Morgan.	19		Leggett's Creek shaft mine.	do.	Shoulders badly bruised ; fall of top roof.
	29.	Patrick Fergusson.	45		Pine Brook shaft mine.	do.	Slightly injured ; a piece of coal fell on his leg.
	29.	James Logan.	39		Storr's shaft mine.	do.	Seriously injured ; premature explosion of a blast.
	30.	Martin Walsh.			Grassy Island shaft mine	do.	Two forefingers cut off ; caught under a car wheel in mines.
May	8.	Joe Bush.	25	1	Simpson slope mines.	do.	Slightly injured ; fall of top rock.
	9.	Evan Anthony.	63	2	Archbald shaft mine.	do.	Injured slightly ; struck by a piece of coal when running away from blast.
	12.	Mike Schrager.	21	2	Dodge shaft mine.	do.	Slightly injured ; fall of roof.
	12.	Victor Cosick.	30	2	Meadow Brook shaft mine.	do.	Hip dislocated : fall of top coal.
	20.	John Bollins.	17	1	Grassy Island shaft mine.	do.	Leg fractured and head bruised ; fall of top bony coal.
	20.	Anthony Connor.	46	1	Coal Brook tunnel shaft mine.	do.	Jaw bone fractured ; fall of roof.
	22.	Thomas Bray.	40	1	Jermyn No. 4 shaft mine.	do.	Were working together ; they fired a blast and went back and
	22.	Joseph Wharton.	28	1	Jermyn No. 4 shaft mine.	do.	set fire to some gas, burning Brady severely and Wharton slightly.
	25.	Gilbert Bartholomew.	30	1	Clinton breaker.	Wayne.	Leg caught in cog wheel of rolls, necessitating amputation.
	25.	Stana Washa.	31	1	Simpson slope mines.	Lackawanna.	Injured slightly ; fall of top coal.
	26.	John Schanneey.	33	2	Sloan shaft mine.	do.	Head and face injured ; fall of bony coal.
	26.	John C. Lavelle.	46	2	Dodge shaft mine.	do.	Cut a finger off with an axe while making a wedge.
	26.	John Wiess.	15	2	Dodge shaft mine.	do.	Fell off front bumper of car; hand caught by wheel; lost three fingers.
	27.	Elijah Hoyes.	21	1	Jermyn No. 3 slope mine.	do.	Injured ; fall of roof ; no bones broken.
	28.	Henry Fadden.	50	1	Storr's shaft mine.	do.	Leg fractured ; caught by loaded car jumping off the track.
June	1.	Michael Carrol.	30	2	Cayuga shaft mine.	do.	Leg slightly injured ; fall of top bony coal.
	1.	Martin Gelboy.	28	2	Cayuga shaft mine.	do.	Seriously injured about back and arms by same fall.
	1.	Patrick Gilgallon.	31	2	Cayuga shaft mine.	do.	Slightly injured about back ; same fall ; in Clark Vein of coal.
	1.	Peter Kline.	54	2	Hyde Park shaft mine.	do.	Head and limbs slightly injured ; while barring down top coal it fell.
	6.	William Grier.	56	1	Erie shaft mine.	do.	Knee joint dislocated ; fall of bony coal.
	12.	Thomas Hart.	17	2	Hyde Park shaft mine.	do.	Skull fractured ; kicked by a mule.

TABLE V—*Continued.*

Date of accident.		NAME OF PERSON INJURED.	Age.	No. of mine district.	Name of Colliery.	Location—County.	Nature and Cause of Accident in Brief.
June	12.	William Watley	30	2	Manville shaft mine	Lackawanna	Face and breast slightly burned while in the act of drawing a charge of powder.
	15.	James Forrester	16	2	Stafford	do.	Right leg fractured; caught under a car wheel while in motion.
	15.	William Williams	26	1	Coal Brook tunnel mine	do	Left hand slightly burned; a spark from lamp exploded powder in box.
	15.	Chris. Taylor	32	1	Coal Brook tunnel mine	do.	Hands and face slightly burned by same explosion.
	15.	Pat Walsh	15	2	Holden shaft mine	do.	Right leg crushed by cars and amputated; kicked under car by a mule.
	17.	John McDermott	50	2	Von Storch shaft mine	do.	Slightly injured; bit off end of safety squib and blast exploded.
	19.	William Malloy	24	1	Pancoast shaft mine	do.	Head badly cut; fall of roof.
	19.	Jeremiah Jones	46	2	Pine Brook shaft mine	do.	Left hip dislocated; fall of roof.
	20.	James McCleary	45	1	Olyphant No. 2 shaft mine	do.	Injured; was tamping a hole to fire when blast exploded.
	23.	George Marsh	17	2	Pyne shaft mine	do.	Cords of leg badly strained; caught by a car.
	24.	William Davis	15	1	Rushbrook shaft mine	do.	Leg caught and squeezed between bumpers of mine cars.
	26.	William Thomas	16	1	Gypsy Grove shaft mine	do.	Collar bone fractured; caught between car and prop.
	27.	John Smyth	28	2	Dodge shaft mine	do.	Eye injured; struck with a pick.
	29.	Frank Polopus	34	2	Continental shaft mine	do.	Leg amputated; car run over it.
July	1.	James Burns	47	1	Marshwood slope mine	do.	Leg fractured; fall of roof.
	2.	Joseph Lewis	29	2	Sloan shaft mine	do.	Slightly injured; fall of blacksmith coal.
	2.	William Jones	21	2	do. do.	do.	Slightly injured; fall of blacksmith coal.
	2.	Thomas McAndrew	17	1	No. 3 shaft, Carbondale	do.	Arm broken; struck by runaway car.
	2.	Peter Kelly	16	2	Von Storch shaft mine	do.	Jaw bone fractured; car ran on it.
	3.	Patrick Costello	33	2	Pine Brook shaft mine	do	Injured slightly; fall of bony coal.
	3.	Simon Petrick	26	2	Brisbin shaft mine	do.	Back seriously injured; fall of bony coal.
	3.	Martin Coolican	14	2	Spencer's shaft mine	do.	Shoulders slightly injured; caught between car and rib.
	6.	Frank Woodward	16	2	Pine Brook shaft mine	do.	Leg slightly injured; caught by a car.
	7.	Thomas Wehuck	32	1	Clifford shaft mine	Susquehanna	Injured slightly; fall of rock.
	7.	Thomas Ruddy	58	2	Von Storch slope mine	Lackawanna	Severely cut on head; struck by falling prop.
	8.	Alexander Travis	43	1	White Bridge Tunnel mine	do.	Left leg fractured; struck by a piece of coal from blast.
	8.	Michael Kilcullen	15	1	Olyphant No. 2 shaft mine	do.	Leg fractured; car jumped off the track and caught it.
	8.	Jacob Valeas	24	2	Sloan shaft mine	do.	Knee severely hurt by a runaway trip of cars.
	11.	Pat. Mulherin	..	2	Oxford breaker	do.	Foot caught between bumper and platform and slightly injured.
	14.	John Stanton	50	2	Cayuga shaft mine	do.	Skull and leg fractured, also injured about the back by a premature explosion of powder cartridge in hole.
	16.	Frank Frabriski	45	2	National shaft mine	do.	Leg slightly injured by a premature explosion of a blast.
	20.	John Meekan	20	1	Glenwood shaft mine	do.	Leg cut and one of the bones broken; fall of brick.
	23.	William Caxter	50	2	Von Storch slope mine	do.	Bruised badly; caught by cars.
	24.	Otto Dorge	22	2	Dodge shaft mine	do.	Instep and toes bruised; run on by cars.

	25.	Joseph Gambo.	28	1	Marshwood slope mine.	do	Leg fractured above the knee: fall of rock.
	27.	Peter Sawyer.	32	2	Spencer's shaft mine.	do.	Shoulder and fore arms slightly burned: explosion of gas.
	28.	John W. Morgan.	19	2	Continental shaft mine.	do.	Arm badly bruised; caught between car and roof.
	28.	William J. Hughes.	15	2	do. do	do.	Fingers badly mashed; caught between cars.
	28.	John McCrackin.	14	2	Bellevue breaker.	do.	Arm broken by falling in breaker.
	31.	Anthony Beboc.	33	2	Bellevue shaft mine.	do.	Slightly injured about back and hips; fall of rock.
Aug.	1.	Thomas Cary.	19	2	Dodge shaft mine.	do.	Hand crushed; caught between bumpers of railroad cars outside.
	3.	Nicholas Frank.	46	1	Simpson breaker.	do.	Left foot cut off; slipped into rolls in breaker.
	6.	John W Evans.	56	2	Hampton shaft mine.	do.	Seriously injured: fall of roof.
	7.	Andrew Hoban.	23	1	Simpson slope mine.	do.	Injured; fall of top rock.
	8.	William Carson.	32	1	Storr's shaft mine.	do.	Burned slightly on face, hands and neck; explosion of gas.
	11.	Edward Malla.	24	2	Meadow Brook shaft mine.	do.	Back broken; fall of roof on main gangway.
	14.	James Shea.	38	2	Taylor shaft mine.	do.	Seriously injured; fall of roof while testing a prop.
	14.	James Payton.	15	2	Spencer's shaft mine.	do.	Right arm mangled, necessitating amputation: fell under a mine car.
	19.	Michael Kelly.	36	2	Manville shaft mine.	do.	Back and shoulders slightly injured: fall of roof.
	21.	Charles Fraley.	12	2	Pyne breaker.	do.	Leg fractured; caught between locomotive and side of breaker.
	21.	James Cardeu.	15	1	Coal Brook tunnel mine.	do.	Leg fractured; mule stepped on it in the barn.
	24.	Patrick Carey.	16	2	Dodge shaft mine.	do.	Two teeth knocked out; kicked by a mule.
	26.	Emlyn Jones.	16	2	Sloan shaft mine.	do.	Kicked over eye by a mule.
	31.	Evan Thomas.	15	1	Wilson Creek tunnel mine.	do.	Leg fractured; missed stepping on bumper, fell under car.
	31.	John Harenton.	15	1	Leggett's Creek shaft mine.	do.	Head and face slightly injured; caught between car and mule.
Sept.	1.	Daniel Hughes.	23	2	Hampton shaft mine.	do.	Injured: fall of rock.
	2.	John Jermuskey.	19	2	Sloan shaft mine.	do.	Leg fractured between knee and ankle: fall of top bony coal.
	4.	Daniel Sheron.	50	2	Green Ridge slope mine.	do.	Slightly injured; fall of roof.
	7.	David Davis.	15	2	Continental shaft mine.	do.	Skull fractured: kicked by a mule.
	7.	William T. Morgan.	37	1	Storr's shaft mine.	do.	Left leg fractured below the knee; fall of top coal.
	11.	Titus Griffiths.	15	2	Diamond shaft mine.	do.	Injured; squeezed between car and rib.
	12.	John Shannon.	30	1	Jermyn No. 4 shaft mine.	do.	Leg fractured: fall of rock roof.
	15.	Bryan Flynn.	50	2	Mount Pleasant shaft mine.	do.	Seriously injured; caught between car and face of chamber.
	15.	William Clark.	13	2	Dodge breaker.	do.	Compound fracture of left leg: caught between two cars on culm dump.
	17.	Andrew Nowork.	28	1	Simpson slope mine.	do.	These men were working together and had orders to take down the 14 inch but did not, it fell on them injuring them slightly.
	17.	Albert Remmer.	27	1	do. do.	do.	
	17.	Thomas Laugan.	30	1	Ben. Carbon, Carbondale.	do.	Slightly injured on head and face; fall of rock and bony coal.
	18.	John Ranigan.	35	1	Pancoast shaft mine.	do.	Head slightly injured by flying coal from blast.
	22.	John Dobna.	42	1	Lackawanna Coal Co. shaft mine.	do.	Large bone of leg fractured; a large piece of coal rolled on it.
	22.	John Doyle.	62	2	Sloan shaft mine.	do.	Head and shoulder injured; struck by a loose timber.
	23.	William H. Davis.	36	1	Eddy Creek shaft mine.	do.	Collar bone fractured; caught between car roof in shop.
	23.	Thomas Kearney.	46	1	Clinton slope and drift mine.	do.	Seriously injured about back and hips and left leg fractured by a fall of rock. Barret slightly injured by same fall.
	23.	James Barnett.	26	1	do. do.	do.	
	25.	Frank Hazletine.	42	2	Capouse shaft mine.	do.	Slightly injured on back: fall of roof while restanding a prop.
	26.	Joseph Miller.	30	2	Von Storch shaft mine.	do.	Badly bruised about body: knocked under car by mule.
	29.	Stephen Sepsick.	21	2	Green Ridge slope mine.	do.	Slightly injured: fall of bony coal.
	29.	James Duffy.	53	2	Brisbin shaft mine.	do.	Injured slightly on right arm: premature explosion of blast.
	31.	William McCoy.	44	2	Capouse shaft mine.	do.	Finger broken: fell while loading coal.
Oct.	5.	Dennis Murphy.	12	1	Leggett's Creek shaft mine.	do.	Bone in arm broken: fell while wrestling with another boy.
	5.	Powell Wise.	30	2	Meadow Brook tunnel mine.	do.	Right arm bruised; fall of rock.
	5.	Walkins Pershenski.	24	1	Jermyn No. 4 shaft mine.	do.	Back seriously injured: fall of rock.
	5.	Gomer Jones.	17	2	Taylor shaft mine.	do.	Burned slightly: explosion of gas.
	8.	John Williams.	50	2	Hampton shaft mine.	do.	These men were working together and were slightly injured by fall of bony coal.
	8.	William Craski.	30	2	do. do.	do.	
	9.	Joseph Parrish.	26	1	Grassy Island shaft mine.	do.	Slightly injured; fall of rock roof.
	9.	Vinco Rokanloc.	26	1	do. do.	do.	Injured slightly; fall of rock roof.
	9.	Harvie Sergeon.	33	1	Leggett's Creek shaft mine.	do.	Right leg fractured; fall of small coal.
	10.	Thomas Fletcher.	17	2	Continental shaft mine.	do.	Slightly injured; fall of bony coal.
	13.	Michael Dacey.	17	2	Sloan shaft mine.	do.	Right hand cut off at wrist; car ran over it.

TABLE V.—*Continued.*

Date of accident.		NAME OF PERSON INJURED.	Age.	No. of mine district.	Name of Colliery.	Location—County.	Nature and Cause of Accident in Brief
Oct	14.	Aglan Verenici.	27	2	Cayuga shaft mine.	Lackawanna.	Back slightly injured: a car run on him.
	14.	Daniel Thomas.	53	2	do. do.	do.	Leg slightly injured; a car bumped against him.
	15.	William McAndrew.	14	2	Hyde Park shaft mine.	do.	Knee slightly injured; caught between a trip of cars.
	16.	Joseph Robert Vasey.	14	1	Grassy Island shaft mine.	do.	Skull fractured; a trip of cars struck his door and struck him on the head.
	19.	Patrick Malia.	48	2	Von Storch shaft mine.	do.	
	19.	Michael Barovitch.	24	2	do. do.	do.	
	19.	Edward Morgan.	15	2	Von Storch shaft mine.	do.	Kicked by a mule until he was unconscious.
	19.	Harry Kearns.	20	1	Keystone tunnel mine.	do.	Leg fractured; caught between bumper of car and rail.
	20.	Michael Garrick.	19	1	Glenwood breaker.	do.	Right arm crushed; caught between pea coal screens and bridge-tree.
	23.	Fred. Brown.	17	2	Bellevue shaft mine.	do.	Head and arms slightly cut; coal fell from top of car on him.
	27.	Anthony Gannon.	55	1	Jermyn No. 4 shaft mine.	do.	Back slightly injured; fall of top coal.
	30.	Paul Dimmick.	23	2	Green Ridge slope mine.	do.	Leg fractured below knee; struck by coal from blast.
	30.	Martin J. Burns.	15	2	Meadow Brook shaft mine.	do.	Arm badly crushed; loaded car ran over it.
	31.	William Pringle.	..	2	Dickson shaft mine.	do.	Badly burned on arms and face; explosion of gas.
	31.	Clarence Pryor.	..	2	do.	do.	Slightly burned by some explosion.
	31.	Charles Kimmish.	35	2	Capouse shaft mine.	do.	Foot slightly injured; fall of rock.
	31.	John Kowah.	27	2	Green Ridge slope mine.	do.	Foot slightly hurt; fall of bony coal.
Nov	2.	George Gomer.	45	1	Lackawanna Coal Co. shaft mine.	do.	Leg fractured by a piece of coal falling and sliding on it.
	4.	Anthony Kegoulas.	20	2	Von Storch slope mine.	do.	Head and face severely cut; a prop fell on him.
	5.	Frank Navok.	51	1	Jermyn No. 4 shaft mine.	do.	Leg fractured; fall of top coal.
	5.	John Kuke.	54	1	do.	do.	Back injured by same fall.
	5.	Walter Carter.	22	2	Capouse shaft mine.	do.	Leg fractured; car jumped off track and caught him between car and rib.
	6.	Patrick Mannion.	25	1	No. 1 shaft, Carbondale.	do.	Right leg and left arm fractured; fall of top coal.
	9.	William Hartman.	20	2	Manville shaft mine.	do.	Slightly injured; thrown from car and caught between mule and rib.
	11.	Robert Gamnell.	30	2	Hyde Park shaft mine.	do.	Seriously injured about back while spragging; was caught under car.
	11.	George White.	40	2	Pyne shaft mine.	do.	Slightly injured on back; struck by a piece of coal from blast.
	13.	Michael Walsh.	21	1	Frisbie tunnel mine.	do.	Hips slightly injured; squeezed between car and roof.
	14.	William Pichford.	45	2	Diamond shaft mine.	do.	Face slightly burned; explosion of gas.
	15.	William D. Reese.	18	2	do.	do.	Slightly injured; squeezed between car and prop.
	19.	Thomas McAvoy.	19	1	Clinton slope and drift mine.	do.	Leg severely lacerated; severing the arteries.
	19.	Jacob Ruff.	40	2	Taylor shaft mine.	do.	Stomach injured; fall of slate and sulphur.
	19.	Martin Youstage.	30	1	Simpson slope mine.	do.	Foot slightly injured; fall of top coal.
	25.	Dominick Gillaspie.	..	2	Dickson shaft mine.	do.	Seriously injured; premature explosion of blast

	23.	Benjamin O'Williams. . . .	50	1	Leggett's Creek mine.	do. . . .	Head cut; premature explosion of blast.
	25.	Lawrence Strombow. . . .	32	1	Clifford mine.	Susquehanna. . . .	Foot injured; fall of rock.
	28.	Joseph Pender.	35	1	Pancoast mine.	Lackawanna. . . .	Face slightly cut; struck by flying coal from blast.
Dec.	3.	John Gross.	38	2	Brisbin shaft mine.	do. . . .	A shot knocked down a prop and while restanding it a fall came.
	12.	William T. Jones.	49	2	Continental shaft mine.	do. . . .	Right hip fractured and right shoulder bruised; fall of coal while in the act of mining under it.
	14.	Dominick Dempsey.	15	2	Green Ridge slope mine.	do. . . .	Injured; fell in front of a car and it run on him.
	15.	John Jones.	25	2	Von Storch slope mine.	do. . . .	Slightly injured about the hip; fall of rock.
	24.	Malica O'Malley.	16	2	Capouse shaft mine.	do. . . .	Collar bone broken; fell off a mule.
	30.	John Wright.	43	2	Hampton shaft mine.	do. . . .	Slightly injured; fall of bony coal.
	5.	Frank Seafring.	29	1	White Oak mine.	do. . . .	Left leg fractured; struck by piece of flying coal from blast.
	7.	John Shenks.	. .	1	Pancoast mine.	do. . . .	Shoulder dislocated; caught between car and prop.
	9.	William Melvage.	28	1	Jermyn No. 3 mine.	do. . . .	Left leg fractured; fall of bony coal.
	16.	Joseph Pinker.	21	1	Pancoast mines.	do. . . .	Big toe cut off; a piece of coal rolled on it.
	26.	David Reese.	18	1	Storr's shaft mine.	do. . . .	Right leg broken; fell in front of car.
	31.	Mike Sedlock.	21	1	Marshwood mine.	do. . . .	Eye injured badly; kicked by a mule.

NOTE. There were 215 non-fatal accidents in the year 1891.

THIRD ANTHRACITE DISTRICT.

(LUZERNE, LACKAWANNA AND SULLIVAN COUNTIES.)

OFFICE OF INSPECTOR OF MINES,
PITTSTON, PA., *March 22, 1892.*

HON. THOMAS J. STEWART,
Secretary of Internal Affairs:

SIR: I have the honor herewith of presenting my annual report as Inspector of mines for the Third anthracite district for the year 1891.

The report contains the full statistics of the Second district previous to the division being made by the commission appointed by the Governor to revise the mining law of 1885, which created a new inspection district from the First and Second districts.

The number of lives lost was 60, leaving 18 wives widows and 63 orphans.

The number of serious non-fatal accidents was 189, being 15 more than the previous year.

The production of coal was 6,125,099¾ tons, being 896,072 tons more than the production of the year 1890. The production of coal per life lost was 102,084 tons, a decrease of 3,823 tons from that of the year 1890.

On March 9, 1891, a commission was appointed by the Governor to revise the anthracite mine law of 1885 and report the results of their labor to the legislature, which was in session at the time. The commission sent in their report at the time specified and it was acted upon and passed with some alterations made by the legislature, one of which left Sullivan county out of the provisions either of the anthracite or bituminous mine law. There being only one colliery in Sullivan county at present, which is located at Bernice, and operated by the State Line and Sullivan Railroad Company, which was under the anthracite law in the Second district at the time of the revision. I asked the officials at Bernice if they would please send all reports of their colliery to me, as usual, which they kindly have done, so that this report contains the full statistics of Bernice colliery as heretofore.

Yours very respectfully,
H. MCDONALD,
Inspector of Mines.

TOTAL QUANTITY OF COAL MINED DURING THE YEAR 1891.

Pennsylvania Coal Company,	1,410,365
Lehigh Valley Coal Company,	621,503.04
Delaware and Hudson Canal Company,	501,750.14
Delaware, Lackawanna and Western Railroad Company,	251,054.19
Butler Coal Company, Limited,	188,040
Newton Coal Company,	249,651.15
Wyoming Valley Coal Company,	96,722
Miscellaneous coal companies,	2,806,012.03
Total,	6,125,099.75

EXAMINATION OF APPLICANTS FOR MINE FOREMAN CERTIFICATES.

The annual examination of applicants for certificates of qualification for mine foremen was held in Pittston, Pa., on July 6 and 7, 1891. The board of examiners was H. McDonald, Thomas Waddell and Patrick Sweeney. The following persons having passed a satisfactory examination were recommended to have certificates given them, qualifying them for the position of mine foreman under the mine law:

Patrick Eagen,	Pittston.
Alexander McCormick,	Pittston.
John Bone,	Pittston.
Gilbert Jones,	Pittston.
Michael Gillboy,	Pittston.
Thomas Smiles, Jr.,	Pittston.
John Joyce,	Pittston.
Thomas O'Brian,	Pittston.
Gotlieb Smattz,	Hughestown.
Hugh McCutcheon,	Miners Mills.

All men who held certificates of service and qualification as mine foremen under the mining law of 1885, were likewise required to have new certificates issued to them under the law of 1891.

One hundred and seventy-six persons were recommended as competent to receive certificates as assistant mine foremen.

NUMBER OF FATAL ACCIDENTS AND TONS OF COAL PRODUCED PER LIFE LOST.

NAME OF THE OPERATORS.	Number of lives lost.	Tons of coal mined per life lost.
Pennsylvania Coal Company,	11	128,215
Lehigh Valley Coal Company,	8	77,688
Delaware and Hudson Canal Company,	5	100,350
Delaware, Lackawanna and Western R. R. Co.,	5	50,210
Butler Colliery Company,	2	94,020
Newton Coal Company,	No life lost.	
Wyoming Valley Coal Company,	No life lost.	
Miscellaneous coal companies,	29	96,759
Total of all companies,	60	102,084

NUMBER OF NON-FATAL ACCIDENTS AND TONS OF COAL PRODUCED PER PERSON INJURED.

NAME OF THE OPERATORS.	Number of persons injured.	Tons of coal produced per person injured.
Pennsylvania Coal Company,	28	50,370
Lehigh Valley Coal Company,	32	19,422
Delaware and Hudson Canal Company,	14	35,839
Delaware, Lackawanna and Western R. R. Co.,	11	22,823
Butler Colliery Company,	11	17,094
Newton Coal Company,	8	31,206
Wyoming Valley Coal Company,	1	96,722
Miscellaneous coal companies,	84	33,404
Total of all companies,	189	32,402

NUMBER OF FATAL AND NON-FATAL INJURIES AND TONS OF COAL PRODUCED PER EACH PERSON KILLED OR INJURED.

NAME OF THE OPERATORS.	Number killed or injured.	Tons of coal produced per person killed or injured.
Pennsylvania Coal Company,	39	36,163
Lehigh Valley Coal Company,	40	15,537
Delaware and Hudson Canal Company,	19	26,407
Delaware, Lackawanna and Western R. R. Co.,	16	15,690
Butler Colliery Company,	13	14,464
Newton Coal Company,	8	31,206
Wyoming Valley Coal Company,	1	96,722
Miscellaneous coal companies,	113	24,831
Total of all companies,	249	24,598

FATAL AND NON-FATAL INJURIES—*Continued.*

CAUSES OF INJURIES.	Killed or fatally injured.	Seriously and slightly injured.
By explosions of carbureted hydrogen gas,	1	22
By falls of roof and coal,	26	74
Crushed and run over by mine cars,	14	42
By explosions of powder and blasts,	8	20
By falling down shafts,	2	
Miscellaneous causes under ground,	3	21
Miscellaneous causes on surface,	6	9
Total,	60	189

OCCUPATION OF PERSONS KILLED OR INJURED.

	Killed.	Injured.
Miners,	17	86
Miners' laborers,	18	38
Drivers and runners,	12	36
Door boys and slate pickers,	5	12
Miscellaneous inside,	6	10
Miscellaneous outside,	2	7
Total,	60	189

NATIONALTY OF PERSONS KILLED OR INJURED.

	Irish.	Welsh.	American.	English.	Scotch.	German.	Swedes.	Hungarians.	Poles.	Italians.	Total.
Killed or fatally injured,	16	7	8	9	2	3		2	12	1	60
Injured,	55	21	31	23	4	7	2	12	33	1	189
Total,	71	28	39	32	6	10	2	14	45	2	249

TABLE A—*Showing the Quantity of Air Circulating through the Mines of the Third Anthracite District at the end of the year 1891.*

Number	NAME OF MINES	Name of the Operators	Number of fans or furnaces.	Number of persons employed in the mines.	Number of separate splits of air.	Cubic feet of air at the intake.	Cubic feet of air at or near the face of workings.	Cubic feet of air at the outlet.
1	Barnum No. 1 and 2 shaft.	Pennsylvania Coal Company.	2	332	9	166,000	157,300	178,100
2	Laws shaft.	do. do.	1	153	4	61 800	41.350	79,200
3	Shaft No. 13.	do. do.	1	150	3	67.950	56,036	48,500
4	Old Forge shaft No. 1.	do. do.	1	230	5	74.840	49.170	112,590
5	Shaft No. 9.	do. do.	1	135	2	48,800	40.800	50.100
6	Shafts No. 10 and 10 Jr.	do. do.	1	141	4	60.900	53.200	64.900
7	Abbott's slope.*	do. do.	1					
8	Shafts No. 1 and 8.	do. do.	1	206	4	67.695	59.670	72.620
9	Slope No. 4.	do. do.	1	102	2	27.825	19.410	28.183
10	Hoyt and No. 7 shaft.	do. do.	1	173	8	85.400	74.000	132.600
11	Shaft No. 5.	do. do.	1	92	4	38.870	37.420	39.200
12	Shaft No. 6.	do. do.	1	75	6	35.700	34.100	37.500
13	Shaft No. 11.	do. do.	1	43	2	17.740	15.540	15.860
14	Shaft No. 14.	do. do.	1	70	4	98.800	95.970	102.800
15	Tunnels No. 1, 2, 3 and 4.	do. do.	1	159	5	76.140	64.720	69.450
16	Shaft No. 4.	do. do.	1	75	3	92.000	83.000	125.000
17	Prospect shaft.	Lehigh Valley Coal Company.	2	157	8	135.591	90.527	145,330
18	Oakwood shaft.	do. do.	1	56	3	50.587	38.555	49.373
19	Midvale slope.	do. do.	1	74	7	100.010	92.720	100.450
20	Wyoming shaft.	do. do.	1	173	6	133.192	117.392	136.635
21	Henry shaft.	do. do.	1	276	8	208.890	133.480	201,450
22	Mineral Spring slope.*	do. do.	1					
23	Coal Brook slope.*	do. do.	1					
24	Exeter shaft.	do. do.	2	112	3	89.660	52.300	64.860
25	Heidelburg shaft.	do. do.	1	73	2	102.514	59.855	102.540
26	Heidelburg slope.	do. do.	1	94	4	89.200	77.200	89.700
27	Maltby shaft.	do. do.	2	153	4	81.400	64.500	83.600
28	Enterprise shaft and slope.*	do. do.	2					
29	Mill Creek slope.*	Delaware and Hudson Coal Company.	1					
30	Delaware shaft.	do. do. do.	1	240	5	61.175	56 835	61.039
31	Pine Ridge shaft.	do. do. do.	2	181	3	150.470	40.655	153.960
32	Laurel Run slope.	do. do. do.	2	150	4	97.720	50.190	64.618
33	Pettebone shaft.	Delaware, Lackawanna and Western Railroad Co.	1	168	6	182.700	153.900	184.700
34	Hunt shaft.*	do. do. do. do.	1					
35	Hallstead shaft.	do. do. do. do.	2	315	6	142.000	130.000	148.400

* Not in operation : no report.

TABLE A—*Continued.*

Number	NAME OF MINES.	Name of the Operators.	Number of fans or furnaces.	Number of persons employed in the mines.	Number of separate splits of air.	Cubic feet of air at the intake.	Cubic feet of air at or near the face of workings.	Cubic feet of air at the outlet.
56	Forty Fort shaft	Wyoming Valley Coal Company	1	80	3	36,645	28,400	52,000
57	Harry E. shaft	do. do.	1	100	2	19,780	45,050	51,000
58	Butler shaft	Butler Coal Company	1	67	2	48,920	32,770	50,400
59	Schooley shaft	do. do.	2	105	3	95,700	90,210	101,850
40	Boston drift	do. do.	Furnace.	16	1	14,000	8,200	14,200
41	Fernwood shaft	do. do.	Sc'm. jet.	42	2	16,600	16,000	17,200
42	Chapman shaft	do. do.	Natural.	12	2	11,640	7,850	14,850
43	Twin shaft	Newton Coal Company	2	189	4	219,220	172,910	255,310
44	Ravine shaft	do. do.	1	73	2	117,120	95,200	132,436
45	Mosier shaft	do. do.	1					
46	Bennett shaft	Waddell & Co.	1	94	2	45,300	35,384	45,590
47	Mill Hollow shaft	do. do.	1	168	4	41,229	32,211	56,813
48	Bernice tunnel	State Line and Sullivan Railroad Company	1	127	2	58,800	18,000	67,000
49	Black Diamond shaft	John C. Haddock	1	232	3	58,445	34,835	63,360
50	Clear Spring shaft	Clear Spring Coal Company	1	175	3	59,000	44,100	59,200
51	Consolidated shaft	Hillside Coal and Iron Company	1	124	3	37,440	31,406	38,340
52	Consolidated slope	do. do.	1	170	4	85,350	70,690	91,340
53	Dunn shaft	John Jermyn & Co.	1	219	4	83,662	80,563	86,412
54	Jermyn shaft No. 2	do. do.	2	210	4	86,265	72,575	85,665
55	Sibley shaft	Elliott and McClure	1	193	4	43,000	34,000	58,000
56	Greenwood shaft No. 1	Greenwood Coal Company	1	121	2	41,000	32,120	67,700
57	Greenwood shaft No. 2	do. do.	1	56	2	23,960	21,200	25,800
58	Greenwood tunnel	do. do.	Furnace.	30	1	9,800	7,200	9,680
59	Elmwood shaft	Florence Coal Company	1	175	3	55,870	41,580	64,600
60	East Boston shaft	W. G. Payne & Co.	1	264	4	100,300	75,000	101,700
61	Fairmount shaft	Abbott Coal Company	1	24	1	8,000	4,000	11,500
62	Hillman slope	do. do.	1					
63	Keystone slope	Keystone Coal Company	2	207	3	97,155	47,973	97,487
64	Columbia shaft	Old Forge Coal Company, Limited	1	145	2	48,214	42,680	47,064
65	Phœnix shaft	do. do. do.	1	56	2	67,210	30,150	67,315
66	Avoca shaft	Avoca Coal Company	1	130	2	42,100	38,400	43,800
67	Annora tunnel	Annora Coal Company	1	161	4	124,300	104,140	127,845
68	Katy Did slope	John M. Robertson & Co.	Furnace.	35	1	12,300	9,500	14,500
69	Langcliffe shaft	Langcliffe Coal Company	1	191	4	60,500	53,000	61,500
70	Stevens slope	Stevens Coal Company	1	64	3	23,460	18,270	24,000
71	Babylon shaft	Babylon Coal Company	1	197	4	60,500	51,800	63,000
72	William A. shaft	Connell & Son	2	146	3	102,794	71,278	103,968

73	Mount Lookout shaft	Mount Lookout Coal Company	1	103	2	45,400	40,400	48,500
74	Morning Star tunnel	Huchens & Co.	Furnace.	50	2	15,430	10,350	15,600
75	Old Forge No. 2 shaft	Pennsylvania Coal Company	1	91	4	97,600	88,162	107,300
	Total		82	8,980	236	4,891,580	3,775,321	5,187,083

N. B.—There were 2,048 persons employed in main air currents which were not reported as working in any particular split of air, adding which makes the total number of employed underground equal to 11,028, and an average of 443 cubic feet of air per minute for each person in the intake.

* Not in operation; no report.

† Robbing pillars; no report

CONDITION OF THE COLLIERIES AT THE END OF THE YEAR 1891.

The condition of the mines of this district, in regard to ventilation and drainage, has been somewhat improved from that of last year, which are two very important items to the health and safety of the employes; yet there are some of the mines which could be improved upon, even in this regard, by the foremen in charge applying more of their time and ingenuity in conducting the air current closer to the face of the workings and not waiting until their attention is called to the omission by the Inspector. By referring to Table A in this report, it can be seen that almost all of the mines of this district have a large quantity of air in circulation in the intakes, which if properly conducted around the workings, would keep them in a healthy atmosphere. There has been a large quantity of powder used by the miners of this district, amounting to 208,241 kegs of 25 pounds each, or 2,602 tons required to produce 6,125,099¾ tons of coal for market.

The greater part of this powder has been used in the thinnest veins where the coal is of a hard nature and very expensive to mine, requiring a large amount of air to keep the workings clear of smoke.

Several of the mines have been taking the pillars out preparatory to abandoning them, which caused some large cave-ins during this year, causing considerable time and expense to get the remaining coal which is a very hazardous undertaking, to those employed in timbering and securing the roof close to the falls. I am happy to say that very few accidents have occurred to the number of men and boys working in this dangerous employment.

DESCRIPTION OF FATAL ACCIDENTS.

In the afternoon of February 7, 1891, a fatal accident caused by the explosion of dynamite occurred at the Mount Lookout colliery, operated by the Mount Lookout Coal Company at Wyoming, whereby, Mathew Kain and Henry Timboy were instantly killed, and William Ross was fatally injured and died on the same evening in the hospital at Wilkesbarre, and the injuring of Luke Michael. Ross and Timboy being sinkers in the shift, Kain and Michael being the headmen. Ross being the chargeman of the shaft at the time, came up the shaft with Timboy to prepare the cartridges to fire the round of six holes in the bottom of the shaft which were being drilled. When Ross and Timboy went into the shanty at the head of the shaft they found only three sticks of powder there, and sent Kain to the magazine for three more sticks, which he brought and placed in an iron elbow and turned on a little steam to thaw them out; while doing so the explosion took place with the above result. I proceeded to the shaft as soon as I was notified, and found the shanty at th head of the shaft completely demolished. I tried to find out how the explosion took place, but the men who were in the shanty at the time being killed or fatally injured, I could not ascertain

how the accident occurred. The theory which I arrived at, was that Ross and Timboy being in the shanty putting the exploders or caps in the cartridges which were thawed out, by some means exploded one of them, as Ross' hand had some of the wire from the exploder driven into it.

The sticks of dynamite were eight inches long and one and one-quarter inches in diameter, of the B. X. climax brand. The explosive power of the exploder or cap was 85 pounds. Luke Michael, one of the headmen, was standing close to the shaft at the time, and had a narrow escape from being blown down the shaft, his wrist being broken, but he escaped without other injuries.

COLLIERY IMPROVEMENTS DURING THE YEAR 1891.

Pennsylvania Coal Company.

In shaft No. 4 a new gravity plane was driven in the Marcy seam, a distance of 153 feet, with a sectional area of 100 square feet.

In shaft No. 9 a new plane was driven in the Red Ash seam, a distance of 485 feet, with a sectional area of 90 square feet.

On the Old Forge shaft No. 2, a new fan 20 feet in diameter was erected, which gives very good results with a working speed of 50 revolutions, exhausting 108,000 cubic feet of air per minute, with a water gauge of 2.75 inches. The engine is a horizontal cylinder 15 by 36 inches, connected direct to fan shaft.

A new fan 20 feet in diameter was erected on a shaft for the purpose to ventilate No. 8 shaft workings; while running 36 revolutions it exausts 95,000 cubic feet of air per minute, with a water gauge of 2 inches. The engine is a horizontal cylinder 15 by 24 inches, connected direct to fan shaft.

Delaware and Hudson Canal Company.

In the Delaware shaft two inside tunnels were driven from the bottom to the top split of the Baltimore seam, a distance of 45 feet each, with a sectional area of seven by nine feet. Likewise two gravity planes, one 1,000 feet and the other 1,200 feet long, with a gravity of 7°, and sectional area of 14 by 8 feet.

In Pine Ridge shaft an underground tunnel was driven from the top to the bottom split of the Baltimore seam, a distance of 150 feet, with an area of 84 square feet.

Delaware, Lackawanna and Western Railroad Company.

The new breaker at the Pettebone shaft has been completed, which was mentioned in my report of 1889. It is a large and commodious structure. The coal from the shaft being hoisted to the surface and taken to the hoisting tower at the breaker to be rehoisted to the dump. The breaker is well finished throughout, having ample room to clean and prepare a large tonnage of coal. The breaker commenced to prepare coal for market in February, 1891.

Newton Coal Company.

At the Twin shaft a twenty-foot Guibal fan was erected on the air shaft as a duplicate to the old one. It exhausts 130,000 cubic feet of air per minute with a working speed of 67 revolutions. The fan is driven by a horizontal engine, cylinder 16 by 30 feet, directly connected to fan shaft.

Butler Coal Company, Limited.

A new shaft 12 by 18 feet, called the Chapman, has been sunk to the Red Ash seam, a distance of 120 feet. The second opening is not completed at this writing. The shaft is situated 4,800 feet southeast of a new breaker, which was built for the purpose of preparing coal for this and the Butler shaft. The coal from the Chapman shaft will be taken to the breaker by a small locomotive. A new fan will be erected as soon as the second opening is completed.

Annora Coal Company.

At the Annora colliery a new Guibal fan 16½ feet in diameter was erected to ventilate the tunnel workings, exhausting 102,870 cubic feet of air per minute with a working speed of 78 revolutions, run by a vertical engine, cylinder 11 by 18 feet.

Stevens Coal Company.

At the Stevens colliery a new rock slope was driven from the surface on a gradient of 30°, cutting the seam at a distance of 818 feet. All the coal from the old slope will be hoisted out of the rock slope, which will shorten the transportation considerably.

Babylon Coal Company.

In the Babylon shaft an underground plane was driven a distance of 1,800 feet on a gradient of 6°. The coal is lowered down by a pair of engines located at the foot, as the greater part of the coal in this colliery is to the rise of the shaft. This plan will be extended from time to time as necessity requires it to be done.

Mount Lookout Coal Company.

Two shafts were sunk by this company on the west side of the Susquehanna river close to the town of Wyoming, on the land of J. B. Schooley. The contract for sinking through the sand and gravel was given to Sooy, Smith & Co., of New York. The size of the shafts being 12 by 24 feet and 12 by 16 feet. The distance from the surface to the rock being 105 feet. The shafts being started in 1889 and completed in 1891.

On January 15, 1892, I wrote to Messrs. Simpson & Watkins for information and drawings in regard to the sinking of these shafts for this report, and received a reply from Sooy, Smith & Co., New York, Simpson & Watkins having referred my letter to them, who submitted the following to me:

NEW YORK, *January 18, 1892.*

H. MCDONALD, *Inspector of Coal Mines:*

DEAR SIR: Messrs. Simpson & Watkins have turned over to us for reply your letter of the 15th inst. asking for information and cuts in regard to the sinking of the Mount Lookout shafts through the quicksand. This work was done by us and we would say that it is extremely difficult to give a detailed or even a satisfactorily comprehensive account of the methods followed or difficulties overcome. In general the process adopted was the pneumatic or compressed-air process. Heavy timber caissons were constructed and sunk on the sites of the shafts by means of compressed air. The quicksand and soft material was excavated by sand pumps and blow pipes usual to such work. A heavy water-tight coffer-dam or crib was constructed on the edge of the caisson deck or roof and was carried up as the caisson sunk, always being above the surface and forming ultimately the walls of the shaft. Steel rail ends were loaded on the roof of caisson and on temporary decks constructed at different heights in the coffer-dam to supply the weight necessary to carry down the caisson as fast as the material was excavated. When the caissons reached the rock at about one hundred feet below the surface, a water-tight joint was made between the shoe or cutting edge of the caisson and the rock which was leveled off for that purpose. It being found that considerable water was coming through the top seams of the rock the latter was excavated in the one case to the depth of about sixteen feet, in the other to a depth of about thirty feet by blasting, and was finally sealed by heavy cement and timber work. The steel rail ends were then removed, the temporary decks and the main roof of the caisson cut out and a continuous water-tight shaft was thus secured from the surface of the ground to a number of feet below the top of the rock. During the progress of the work, and also for permanent purposes, the caissons and shaft were heavily braced. This is in outline the description of the methods adopted in sinking the Mount Lookout shafts. The drawings used as working drawings are of such nature as to be of no practical value to you. Regretting that we are not enabled to supply you more fully with the information you want, and hoping that the above will be of some use to you, and holding ourselves open to any specific inquiries you may care to make, we are

Very truly yours,

SOOY, SMITH & CO.

The shafts were cribbed with Georgia pine 12 inches square, doubled and bolted together every three feet. The hoisting shaft came down on the side of an anticlinal causing a rock tunnel to be driven to reach the Pittston seam, a distance of 450 feet. A small locomotive has been placed in the mines to bring the coal to the foot of the hoisting shaft. A fan 20 feet in diameter was erected on one compartment of the hoisting

shaft to furnish the ventilation until the second opening was completed, when it will be placed on the shaft sunk for the purpose. A large and substantial breaker with a capacity of 1,000 tons per day has been erected to prepare the coal for market. It commenced to prepare coal in August, 1891. The coal from the breaker is shipped over the Lehigh Valley railroad to market. The machinery in and around the breaker is of the very best, and all dangerous places are properly guarded for safety to the employes.

John A. Hutchins & Co.

A new colliery called the Morning Star, operated by John A. Hutchins & Co., has been started to prepare and ship coal. It is situated one-half mile north of the town of Wyoming. The opening consists of a tunnel cutting the Cooper and Bennett seams at a distance from the surface of 450 feet. The veins are 4½ feet. The ventilation is produced by a furnace. A small breaker has been built 500 yards from the opening, which commenced to prepare and ship coal to market in June, 1891

TABLE I—*Showing Location of Collieries in the Third Anthracite Mine District.*

NAME OF COLLIERY.	Name of Operator.	Location.	Name of Superintendent.	Postoffice Address.
Barnum shaft No. 1.	Pennsylvania Coal Company.	Marcy township.	A. Bryden; assistant, Alex Bryden.	Pittston, Luzerne county.
Barnum shaft No. 2.	do. do.	do.	do. do. do.	do. do.
Laws shaft.	do. do.	Pittston township.	John B. Law.	do. do
Shaft No. 13.	do. do.	Old Forge township.	do.	do. do.
Old Forge shaft.	do. do.	do. do.	do.	do. do.
Shaft No. 9.	do. do.	Hughestown borough.	A. Bryden; assistant, Alex Bryden.	do. do.
Shafts No. 10 and 10 Jr.	do. do.	do. do.	do. do. do.	do. do.
Abbotts slope.	do. do.	Jenkins township.	do. do. do.	do. do.
Shafts No. 1 and 8.	do. do.	do. do.	do. do. do.	do. do.
Slope No. 4.	do. do.	do. do.	John B. Law.	do. do.
Shaft No. 4.	do. do.	do. do.	do.	do. do.
Shaft No. 7.	do. do.	do. do.	do.	do. do.
Shaft No. 5.	do. do.	do. do.	do.	do. do.
Shaft No. 6.	do. do.	do. do.	do.	do. do.
Shaft No. 11.	do. do.	do. do.	do.	do. do.
Shaft and slope No. 14.	do. do.	do. do.	do.	do. do.
Tunnels No. 1, 2, 3 and 4, No. 14.	do. do.	do. do.	do.	do. do.
Hoyt shaft.	do. do.	do. do.	do.	do. do.
Prospect shaft.	Lehigh Valley Coal Company.	Plains township.	W. A. Lathrope.	Wilkesbarre, Luzerne co.
Oakwood shaft.	do. do.	do.	do.	do. do.
Henry shaft.	do. do.	do.	do.	do. do.
Mineral Spring slope.	do. do.	Parsons borough.	do.	do. do.
Coal Brook slope.	do. do.	do.	do.	do. do.
Exeter shaft.	do. do.	Exeter borough.	do.	do. do.
Heidelberg shaft.	do. do.	Pittston township.	do.	do. do.
Heidelberg slope.	do. do.	do. do.	do.	do. do.
Midvale, two slopes.	do. do.	Plains township.	do.	do. do.
Maltby shaft.	do. do.	Kingston township.	do.	do. do.
Wyoming shaft.	do. do.	Plains township.	do.	do. do.
Enterprise shaft and slope.	do. do.	do.	do.	do. do.
Mill Creek slope.	Delaware and Hudson Canal Company.	do.	A. H. Vandling.	Scranton, Lackawanna co.
Delaware shaft.	do. do. do.	Miners Mills.	do.	do. do.
Pine Ridge shaft.	do. do. do.	Parsons.	do.	do. do.
Laurel Run slope.	do. do. do.	Kingston township.	W. R. Storrs.	do. do.
Pettebone shaft.	Dela., Lacka. and Western R. R. Co.,	do. do.	do.	do. do.
Hunt shaft.	do. do. do.	Marcy township.	do.	do. do.
Hallstead shaft.	do. do. do.	Pittston township.	S. B. Bennett.	Pittston, Luzerne county.
Butler shaft.	Butler Colliery Company.	Exeter boro.	do.	do. do.
Schooly shaft.	do. do.	Jenkins township.	do.	do. do.
Boston drift.	do. do.	do. do.	do.	do. do.
Fernwood shaft.	do. do.	do. do.	do.	do. do.
Chapman shaft.	do. do.	Kingston township.	W. A. Lathrope.	Wilkesbarre, Pa.
Forty Fort shaft.	Wyoming Valley Coal Company.	do. do.	do.	do.
Harry E. shaft.	do. do.	Hughestown.	John A. Mears.	Scranton, Pa.
Mosier shaft.	Newton Coal Company.	Pittston.	do.	do.
Twin shaft.	do. do.	do.	do.	do.
Ravine shaft.	do. do.	Plains township.	Thomas Waddell.	Pittston, Pa.
Bennett shaft.	Thomas Waddell & Co.,	Luzerne borough.	do.	do.
Mill Hollow shaft.	do. do.	Bernice, Sullivan county.	I. O. Blight.	Towanda, Pa.
Bernice drifts.	State Line and Sullivan R. R. Co.			

TABLE I—*Continued.*

NAME OF COLLIERY.	Name of Operator.	Location.	Name of Superintendent.	Postoffice Address.
Black Diamond shaft.	John C. Haddock.	Luzerne borough.	James B. Davis.	Plymouth, Pa.
Clear Spring shaft.	Clear Spring Coal Company.	Pittston borough.	J. L. Cake.	Pittston, Pa.
Consolidated slope and shaft.	Hillside Coal and Iron Company.	Avoca borough.	W. A. May.	Scranton, Pa.
Dunn shaft.	Jermyn & Co.	Rendham.	Jos. J. Jermyn.	do.
Jermyn No. 2 shaft.	do. do.	Old Forge township.	do.	do.
Sibley shaft.	Elliott, McClure & Co.	do. do.	J. C. McClure.	do.
Greenwood, 2 shafts and tunnel.	Greenwood Coal Company.	Lackawanna township.	W. G. Thomas.	do.
Elmwood shaft.	Florence Coal Company.	Pittston township.	Austin Moore.	do.
East Boston shaft.	W. G. Payne & Co.	Kingston township.	E. F. Payne.	Kingston, Pa.
Fairmount shaft.	Abbott Coal Company.	Pittston township.	S. C. Adams.	Pittston, Pa.
Hillman slope.	do. do.	do. do.	do.	do.
Keystone slope.	Keystone Coal Company.	Plains township.		do.
Columbia shaft.	Old Forge Coal Company, Limited.	Marcy township.	John A. Mears.	Scranton, Pa.
Phœnix shaft.	do. do. do.	do.	do.	do.
Katydid shaft.	John M. Robertson & Co.	Avoca.	John M. Robertson.	Moosic, Pa.
Stevens slope.	Stevens Coal Company.	Exeter.	A. B. Stevens.	Scranton, Pa.
Annora tunnel.	Annora Coal Company.	Laflin.	J. H. Conyngham.	Wilkesbarre, Pa.
Langcliffe shaft and tunnel.	Langcliffe Coal Company.	Avoca.	William T. Smith.	do
Avoca shaft.	Avoca Coal Company.	do.	W. H. Hollister.	Avoca, Pa.
Babylon shaft.	Babylon Coal Company.	Duryea.	J. L. Crawford.	Scranton, Pa.
Mount Lookout.	Mount Lookout Coal Company.	Wyoming.	do.	do.
William A. Shaft.	William Connell & Son.	Old Forge township.	William A. Connell.	do.
Morning Star tunnel.	John A. Hutchins & Co.	Wyoming.	D. R. Morgan.	Wyoming, Pa.

TABLE II—*Gives the total number of tons of coal mined and shipped in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Third Anthracite District for the year ending December 31, 1891.*

NAMES OF COLLIERIES	Location.	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number of non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.
Pennsylvania Coal Company.											
Barnum, 2 shafts	Marcy township	222,822	215,481	200.75	537	2	3	7,688	19	65	...
Shaft No. 13, Central breaker	Old Forge township	197,501	188,356	199.75	437	1	1	4,389	32	48	1
Laws shaft, Central breaker	Pittston township						3				
Old Forge, Nos. 1 and 2 shafts	Old Forge township	190,753	187,817	200	467	2	4	6,898	14	46	2
Shaft No. 9	Hughestown	142,797	138,487	196.50	460	1	2	5,760	26	51	...
Shaft No. 10 and Abbott's slope							3				
Shafts Nos. 1 and 8	do.	126,562	124,949	216.25	325	1	3	3,209	18	30	...
Slope No. 4							1				
Shaft No. 7	Ewing breaker	218,942	209,536	200.75	621	1		5,656	39	56	...
Shaft No. 4							1				
Hoyt shaft							2				
Shaft No. 5											
Shaft No. 6	No. 6 breaker	122,742	118,862	196.25	384	...	3	3,972	24	66	...
Shaft No. 11							1				
Shaft, slope and tunnels No. 14	do.	188,246	182,486	198	398	3	2	5,405	24	49	1
Total Pennsylvania Coal Company		1,410,365	1,365,974	201.30	3,629	11	28	42,977	196	411	4
Lehigh Valley Coal Company.											
Prospect, 2 shafts and slope	Plains township	219,584.16	219,541.16	203.55	640	...	13	5,457	40	77	3
Midvale slope	do.	5,193.18	5,189.18	22.80	112	1	6	60	6	7	...
Wyoming shaft and slope	do.	75,764.09	69,743.09	109.85	318	2	5	2,659	18	44	...
Henry shaft	do.	135,168	132,305	180.40	427	2	3	4,910	21	68	...
Maltby shaft	Kingston township	81,381	80,118	192.10	289	...	3	3,803	20	22	...
Mineral Spring, 2 slopes	Parsons	5,513.07	5,394.07	16.60	197	...	...	152	14	21	1

TABLE II—*Continued.*

NAMES OF COLLIERIES	Location.	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.
Exeter shaft	Exeter	44,312	40,782	143.60	238	1	2	1,820	19	41	1
Heidelburg shaft	Pittston township	48,178	47,981	180.45	273	1	. . .	1,721	12	26	. . .
Heidelburg slope	do.	6,107.14	6,086.14	24.45	201	1	. . .	206	6	21	. . .
Enterprise shaft and slope.*	Plains township.										
Total Lehigh Valley Coal Company		621,503.04	607,142.04	168.30	2,698	8	32	20,788	156	327	5
Delaware and Hudson Canal Company.											
Mill Creek slope	Plains township	49,144.06	49,144.06	141	147	. . .	1	653	23	14	. . .
Delaware shaft	do.	210,839.05	210,573.04	221.50	397	2	9	5,688	15	46	. . .
Pine Ridge shaft	Miners Mills	158,756.11	153,257.02	209.25	450	2	3	4,734	21	59	. . .
Laurel Run slope	Parsons	83,010.12	83,010.12	177.75	329	1	1	4,134	12	40	. . .
Total Delaware and Hudson Canal Company		501,750.14	495,985.04	187.40	1,323	5	14	15,209	71	159	. . .
Del., Lacka. and Western Railroad Co.											
Hunt shaft	Kingston township	. . . . .	. . . . .	. . . . .	3	. . .	. . .	. . . . .	12	. . .	. . .
Hallstead shaft	Duryea	175,409.07	160,564.07	164.70	459	4	5	5,122	23	62	. . .
Pettebone shaft	Kingston township	75,645.12	64,332.12	206.10	310	1	6	2,553	24	17	. . .
Total Del., Lacka. and Western Railroad Co.		251,054.19	224,896.19	180.40	772	5	11	7,675	59	79	. . .
Butler Colliery Company.											
Fernwood shaft	Jenkins township	37,876	35,924	223	101	1	. . .	2,347	6	8	. . .
Chapman shaft	do.	49,274	45,524	213	211	. . .	1	2,682	8	17	. . .
Butler shaft							1				
Schooley shaft	Exeter	100,890	91,190	188	252	1	7	4,100	21	20	1
Total Butler Colliery Company		188,040	172,638	208	564	2	11	9,129	35	45	1

*Idle all year.

Newton Coal Company.												
Twin shaft	Pittston	238,831.05	227,664.04	221	325	...	7	7,128	18	44	...
Ravine shaft					261	..	1	2,414	18	13	3
Mosier shaft	Hughestown	10,820.10	10,811.12	58.20	76	...	...	216	12	9	...
Total Newton Coal Company		249,651.15	238,475.16	221	662	...	8	9,758	48	66	3
Wyoming Valley Coal Company.												
Harry E shaft	Kingston township	13,107	11,235	39.90	221	...	...	665	16	22	...
Forty Fort shaft	do.	83,615	79,889	188.10	283	...	1	3,326	18	29	...
Total Wyoming Valley Coal Company		96,722	91,124	188.10	504	...	1	3,991	34	51	...
Miscellaneous Coal Companies.												
Bernice drifts	Bernice, Sullivan county	74,884.07	71,540.08	232	229	...	1	1,258	2	37	1
Bennett shaft	Plains township	89,503.09	85,323.09	232.60	191	1	2	3,099	10	29	...
Mill Hollow shaft	Luzerne borough	112,062.01	100,148	220.50	300	...	4	3,179	17	25	...
Black Diamond shaft	do.	175,679.11	160,765.03	188.50	381	3	8	5,622	22	34	...
Clear Spring shaft	Pittston borough	173,306.01	160,137.16	202.25	402	4	4	5,650	21	68	...
Consolidated shaft and slope	Avoca borough	154,404.14	144,273.14	231.25	406	...	4	5,782	13	33	1
Dunn shaft	Old Forge township	196,742.06	193,988.06	203.80	539	...	1	6,716	15	51	...
Sibley shaft	do.	132,482.05	119,163.11	211.60	313	...	1	5,131	13	34	...
Elmwood shaft	Pittston township	118,299	107,550	184.90	264	...	...	3,898	11	35	...
East Boston shaft	Kingston township	195,986.17	192,974.17	222.80	419	1	8	6,176	24	43	...
Fairmount shaft	Pittston township	3,936	3,500	97	51	1	..	195	6	6	...
Hillman slope	Plains township	14,500	12,000	....	158	2	2	550	9	20	...
Keystone slope	do.	99,742	99,040	202.15	282	1	5	6,941	8	26	...
Columbia shaft	Marcy township	129,999.17	125,724.16	182.50	310	1	1	4,412	8	34	...
Phœnix shaft	do.	19,725.10	18,220.16	40.50	45	1	...	....	5	3	...
Avoca shaft	Avoca	62,868.04	61,881.01	223.60	216	...	1	2,546	4	24	...
Stevens slope	Exeter	23,977.06	22,819.06	246.30	177	...	2	1,575	13	16	...
Annora tunnel	Laflin	155,687	155,687	205	368	3	4	4,825	7	44	1
Langcliffe shaft	Avoca	172,059.02	166,615.02	239.55	438	2	5	5,268	6	...	...
Katy Did slope	do.	25,715	23,804	207	95	...	...	703	3	9	...
Greenwood, 2 shafts and tunnel	Lackawanna township	158,735.03	142,628.03	155	358	...	3	6,059	19	73	1
Babylon shaft	Duryea	180,484.02	158,777.12	198.80	327	1	9	5,601	12	40	...
Jermyn No. 2 shaft	Old Forge township	132,625.19	132,625.19	175.60	385	3	12	5,415	15	28	...
William A shaft	do.	160,868	150,924	212	295	1	3	6,048	15	28	...
Mount Lookout shaft	Wyoming	30,841.10	27,079.07	71.50	162	4	4	1,574	18	16	1
Morning Star tunnel	do.	10,896.19	10,186.17	132	93	...	...	500	2	5	...
Total miscellaneous coal companies		2,806,012.03	2,647,379.03	205.30	7,202	29	84	98,714	298	761	5

TABLE II—*Recapitulation.*

	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.
Pennsylvania Coal Company	1,410,365	1,365,974	201.30	3,629	11	28	42,977	169	411	4
Lehigh Valley Coal Company	621,503.04	607,142.04	168.30	2,698	8	32	20,788	156	327	5
Delaware and Hudson Canal Company	501,750.14	495,985.04	187.40	1,323	5	14	15,209	71	159	. . .
Delaware, Lackawanna and Western Railroad Company	251,054.19	224,896.19	180.40	772	5	11	7,675	59	79	. . .
Butler Colliery Company	188,040	172,638	208	564	2	11	9,129	35	45	1
Newton Coal Company	249,651.15	238,475.16	221	662	. . .	8	9,758	48	66	3
Wyoming Valley Coal Company	96,722	91,124	188.10	504	. . .	1	3,991	34	51	. . .
Miscellaneous coal companies	2,806,012.03	2,647,379.03	205.30	7,202	29	84	98,714	298	761	5
Total of all coal companies	6,125,099.15	5,843,615.06	*194.90	17,354	60	189	208,241	870	1,899	18

* Average time.

TABLE III.—*Showing the number of each class of employes at each colliery in the Third Anthracite District during the year 1891.*

NAME OF COLLIERIES.	NAMES OF PERSONS EMPLOYED INSIDE.							NAMES OF PERSONS EMPLOYED OUTSIDE.							GRAND TOTAL INSIDE AND OUTSIDE.
	Inside foreman.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Pennsylvania Coal Company.															
Barnum 2 shafts	2	146	141	29	64	30	412	1	5	11	63	41	4	125	537
Shaft No. 13, Central breaker	2	111	115	25	38	15	306	1	5	16	64	44	1	131	437
Laws shaft, Central breaker															
Old Forge No. 1 and 2 shafts	2	121	120	28	39	20	330	1	5	14	66	50	1	137	467
Shaft No. 9, Central breaker															
Shaft No. 10 and Abbott's slope, Central breaker	2	128	104	23	50	19	326	1	4	12	65	51	1	134	460
Shafts No. 1 and 8	1	89	74	18	27	6	215	1	4	6	57	41	1	110	325
Slope No. 4, Ewing breaker															
Shaft No. 7, Ewing breaker															
Shaft No. 4, Ewing breaker	3	150	139	45	47	15	399	5	5	18	118	75	1	222	621
Hoyt shaft, Ewing breaker															
Shafts No. 5, 6 and 11	3	86	89	28	46	6	258	1	6	10	80	28	1	126	384
Shaft, slope and tunnel No. 14	2	96	102	20	24	11	255	1	3	15	75	48	1	143	398
Total Pennsylvania Coal Company	17	927	884	216	335	122	2,501	12	37	102	588	378	11	1,128	3,629
Lehigh Valley Coal Company.															
Prospect, 2 shafts and slope	3	125	125	45	81	18	397	1	10	27	129	74	2	243	640
Midvale slope	1	19	19	6	6	. . .	51	1	. . .	4	43	12	1	61	112
Wyoming shaft and slope	1	58	50	23	33	10	175	1	6	13	80	38	5	143	318
Henry shaft	1	72	74	35	82	29	293	1	6	7	58	60	2	134	427
Maltby shaft	1	47	38	11	22	3	152	1	4	9	97	24	2	137	289
Mineral Spring, 2 slopes	1	38	32	9	24	3	107	1	3	8	50	26	2	90	197
Exeter shaft	1	49	37	25	17	3	132	1	6	8	57	32	2	106	238
Heidelburg shaft	1	39	34	27	19	5	125	1	4	6	85	50	2	148	273
Heidelburg slope	1	35	30	15	16	2	99	1	4	6	47	45	2	105	204
Enterprise shaft and slope (idle all year)	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Total Lehigh Valley Coal Company	11	512	439	196	300	73	1,531	9	43	88	646	361	20	1,167	2,698

TABLE III—*Continued.*

NAMES OF COLLIERIES.	NAMES OF PERSONS EMPLOYED INSIDE.							NAMES OF PERSONS EMPLOYED OUTSIDE.							Grand total inside and outside.
	Inside foremen.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Delaware and Hudson Canal Company.															
Mill Creek slope	1	14	26	15	11	2	69	1	3	10	40	23	1	78	147
Delaware shaft	1	78	78	32	46	26	261	1	4	10	80	40	1	136	397
Pine Ridge shaft	1	88	88	39	40	24	280	1	6	13	109	40	1	170	450
Laurel Run slope	1	50	50	27	39	10	177	1	6	7	95	42	1	152	329
Total Delaware and Hudson Canal Company	4	230	242	113	136	62	787	4	19	40	324	145	4	536	1,323
Delaware, Lackawanna and Western Railroad Company.															
Hunt shaft								1				2		3	3
Hallstead shaft	2	130	80	28	47	17	304	1	7	11	83	52	1	155	459
Pettebone shaft	1	57	57	20	17	9	161	1	5	17	82	43	1	149	310
Total Delaware, Lackawanna and Western R. R. Co.	3	187	137	48	64	26	465	3	12	28	165	97	2	307	772
Butler Colliery Company.															
Fernwood shaft	1	40		10	10	2	63	1	2	4	20	10	1	38	101
Chapman shaft, Butler shaft, Schooley shaft	1	46	37	25	20	2	131	1	3	7	42	26	1	80	211
	1	69	45	16	22	7	160	1	4	7	60	18	2	92	252
Total Butler Colliery Company	3	155	82	51	52	11	354	3	9	18	122	54	4	210	564
Newton Coal Company															
Twin shaft	2	110	115	36	40	8	311	1	2	5		6		14	325
Ravine shaft	1	35	37	9	13	3	98	1	9	10	90	50	3	163	261
Mosier shaft	1	14	14	12	6		47	1	2	4	11	10	1	29	76
Total Newton Coal Company	4	159	166	57	59	11	456	3	13	19	101	66	4	206	662
Wyoming Valley Coal Company.															
Harry E. shaft	1	45	40	17	26	6	135	1	4	4	45	30	2	86	221
Forty Fort shaft	1	60	60	30	22	10	183	1	5	9	53	30	2	100	283
Total Wyoming Valley Coal Company	2	105	100	47	48	16	318	2	9	13	98	60	4	186	504

Miscellaneous Companies.															
Bernice drifts	1	120	. . . .	4	16	4	145	1	3	5	44	30	1	84	229
Bennett shaft	1	39	39	16	29	4	128	1	4	4	31	20	3	63	191
Mill Hollow shaft	2	100	40	20	42	6	210	1	4	7	40	36	2	90	300
Black Diamond shaft	1	93	75	28	39	16	252	1	6	10	78	31	3	129	381
Clear Spring shaft	1	85	85	40	57	30	298	1	4	8	51	37	3	104	402
Consolidated shaft and slope	2	100	80	25	42	12	261	1	8	8	70	55	3	145	406
Dunn shaft	2	112	112	42	74	6	348	1	5	7	119	56	3	191	539
Sibley shaft	1	80	45	21	35	7	189	1	4	4	85	28	2	124	313
Elmwood shaft	1	54	54	16	27	3	155	1	3	4	67	30	4	109	264
East Boston shaft	2	100	70	38	50	14	274	1	4	10	94	31	5	145	419
Fairmount shaft	1	18	10	2	4	. .	35	1	2	3	3	6	1	16	51
Hillman slope	2	25	19	10	8	2	66	3	2	4	20	60	3	92	158
Keystone slope	1	60	70	10	40	8	189	1	4	4	60	21	3	93	282
Columbia shaft	1	65	60	25	33	6	190	1	5	7	70	35	2	120	310
Phœnix shaft	. . .	14	14	6	2	. . .	36	1	1	2	. . .	5	. . . .	9	45
Avoca shaft	1	54	30	20	20	7	132	1	2	3	48	27	3	84	216
Stevens slope	1	36	30	18	12	2	99	1	3	9	43	20	2	78	177
Annora tunnel	1	74	64	42	19	11	211	1	5	8	58	82	3	157	368
Langcliffe shaft	1	100	100	40	40	10	291	1	4	6	90	44	2	147	438
Katy Did slope	1	20	20	4	4	2	51	1	2	4	16	20	1	44	95
Greenwood, 2 shafts and tunnel	2	80	80	25	29	12	228	1	5	9	67	45	3	130	358
Babylon shaft	1	79	75	26	36	6	223	1	5	8	40	47	3	104	327
Jermyn shaft No. 2	1	101	75	27	51	8	263	1	4	7	70	38	2	122	385
William A. shaft	1	85	56	11	33	6	192	1	5	9	55	28	3	101	293
Mount Lookout shaft	2	43	30	11	10	4	100	2	6	8	15	28	3	62	162
Morning Star tunnel	1	33	10	4	2	. . .	50	1	2	2	15	20	3	43	93
Total miscellaneous coal companies	32	1,770	1,343	531	754	186	4,616	29	102	160	1,349	880	66	2,586	7,202

Recapitulation.

Pennsylvania Coal Company	17	927	884	216	335	122	2,501	12	37	102	588	378	11	1,128	3,629
Lehigh Valley Coal Company	11	512	439	196	300	73	1,531	9	43	88	646	361	20	1,167	2,698
Delaware and Hudson Canal Company	4	230	242	113	136	62	787	4	19	40	324	145	4	536	1,323
Delaware, Lackawanna and Western Railroad Company	3	187	137	48	64	26	465	3	12	28	165	97	2	307	772
Butler Colliery Company	3	155	82	51	52	11	354	3	9	18	122	54	4	210	564
Newton Coal Company	4	159	166	57	59	11	456	3	13	19	101	66	4	206	662
Wyoming Valley Coal Company	2	105	100	47	48	16	318	2	9	13	98	60	4	186	504
Miscellaneous coal companies	32	1,770	1,343	531	754	186	4,616	29	102	160	1,349	880	66	2,586	7,202
Total of all coal companies	76	4,045	3,39	1,259	1,748	507	11,028	65	244	468	3,393	2,041	115	6,326	17,354

TABLE IV.—*List of Fatal Accidents occurring in and about the Mines of the Third Anthracite District for the year ending December 31, 1891.*

Date of accident.	No. of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	No. of orphans.	Name of Colliery.	Location.	Nature and Cause of Accident.
Jan. 2.	1	Joseph Besket.	Laborer. . . .	25	S.	. .	Hallstead shaft.	Duryea.	Instantly killed while holding his back against a mine car while the mule was passing same.
5.	2	Thomas Coleman. . . .	Laborer. . . .	59	S.	. .	Barnum No. 1.	Marcy township.	Killed by being run over by mine car while pushing one in front of it.
10.	3	Thomas Phillips. . . .	Miner.	57	M.	5	Annora tunnel.	Laflin borough.	Instantly killed by car while walking on the chamber road.
15.	4	John Delman.	Laborer. . . .	26	S.	. .	Abbott slope.	Plains township.	Fatally injured by fall of rock while robbing pillars; died same day.
15.	5	Wm. Jones.	Driver.	17	S.	. .	Pine Ridge shaft. . . .	Miners Mills.	Fatally injured by a runaway car; died the next day.
19.	6	Michael Gutchaw. . . .	Slate picker. . .	14	S.	. .	Midvale breaker.	Plains township.	Fatally injured; caused by getting his coat caught in the cog wheels; died next day.
20.	7	John Vitonyae.	Box carrier. . .	25	S.	. .	Heidelburg breaker. . . .	Smithville.	Killed by falling on the mud screen while climbing over the railing.
28.	8	John Rider.	Slate picker. . .	13	S.	. .	Abbott breaker.	Plains township. . . .	Instantly killed by culm cars at noon time.
Feb. 3.	9	Wm. Jenkins.	Plane footman. .	19	S.	. .	Heidelburg breaker No. 1.	Pittston township. . . .	Fatally injured by being kicked on the head by a mule; died same day.
7.	10	Henry Timboy.	Sinker.	33	M.	1	Mount Lookout. . . .	Wyoming.	Timboy and Kane were instantly killed and Ross fatally injured by an explosion of dynamite. (See description in report.)
7.	11	Mathew Kane.	Headman. . . .	32	S.	. .			
7.	12	Wm. Ross.	Sinker.	41	M.	6			
7.	13	Wm. Odgers.	Miner.	28	M.	3	Old Forge shaft.	Old Forge township. . . .	Instantly killed by a fall of roof rock in chamber.
12.	14	Andrew Olevich.	Miner.	33	M.	4	Jermyn shaft No. 2. . . .	Old Forge township. . . .	Fatally injured by premature blast; died on the 15th.
13.	15	John Dunning.	Driver.	17	S.	. .	Old Forge shaft.	Old Forge township. . . .	Instantly killed by being caught between car and rib.
17.	16	James Greely.	Culm man. . . .	50	W.	. .	Henry shaft.	Plains township.	Killed while in the act of opening a door by the cars striking the same and knocking him on the road and cars going over him.
20.	17	Wm. Tennant.	Miner.	22	S.	. .	Tunnel No. 3, No. 14. . .	Jenkins township. . . .	Fatally injured by fall of roof rock; died on his way home.
Mar. 17.	18	Matthew Ellis.	Miner.	47	M.	7	Black Diamond shaft. . .	Luzerne borough. . . .	Instantly killed by fall of checker slate.
May 15.	19	Michael Savage.	Miner.	30	S.	. .	Langcliffe shaft.	Avoca borough.	Instantly killed by being caught between roof and cage in shaft.
15.	20	John Myland.	Laborer. . . .	38	S.	. .	Tunnel No. 1, No. 14. . .	Jenkins township. . . .	Fatally injured by a fall of rider coal; died May 17
22.	21	Joseph Payenick. . . .	Laborer. . . .	37	M.	4	Langcliffe shaft.	Avoca township.	Killed by fall of roof.

28.	22	Stasslus Ykanavich.	Miner.	38	M.	2	Clear Spring shaft.	West Pittston.	Killed by a neighboring miner firing a shot without giving warning.
June 5.	23	Isaac Hopper.	Miner.	57	M.	4	Jermyn No. 2 shaft.	Old Forge.	Fatally injured by a premature blast; died same day.
10.	24	Michael McManus.	Miner.	50	M.	6	Delaware shaft.	Plains township.	Killed by fall of top rock while driving an entrance.
20.	25	John Casedore.	Miner.	32	S.		Fernwood shaft.	Jenkins township.	Killed by fall of roof rock.
22.	26	JosephG awker.	Laborer.	25	S.		East Boston shaft.	Kingston township.	Killed by a fall of middle rock.
July 6.	27	John Coffey.	Laborer.	25	S.		William A. shaft.	Old Forge township.	Instantly killed by fall of roof and coal.
23.	28	Alexander McClusky.	Laborer.	20	S.		No. 14 shaft.	Jenkins township.	Instantly killed by fall of rock.
25.	29	Andrew Kozener.	Miner.	40	M.	4	Keystone slope.	Plains township.	Killed by a fall of coal and rock.
31.	30	Samuel Difodds.	Laborer.	25	M.		Jermyn No. 2 shaft.	Old Forge township.	Killed by fall of rock.
Aug. 3.	31	Joseph Stanisvisky.	Laborer.	32	M.		Pettebone shaft.	Kingston township.	Killed by a car coming out of chamber and he did not get out of the way when told.
6.	32	Hugh Belger.	Driver.	17	S.		Laurel Run slope.	Parsons.	Fatally injured by being caught between top rail of car and roof; died next day.
8.	33	Wilson Jacoby.	Driver boss.	25	S.		Mount Lookout shaft.	Wyoming.	Killed by fall of roof on heading road.
11.	34	Thomas Nancarrow.	Laborer.	37	S.		Black Diamond shaft.	Luzerne.	Killed by falling off the cage while going up the shaft.
21.	35	Martin Golden.	Slate picker.	15	S.		Ewen breaker.	Port Griffith.	Instantly killed at noon hour by cars under the breaker by falling under them.
28.	36	Hamilton Seymore.	Miner.	35	S.		Pine Ridge shaft.	Miners Mills.	Killed by a premature blast he was firing.
Sept. 3.	37	Jobe Tilly.	Laborer.	20	S.		Delaware shaft.	Plains township.	Killed by fall of top rock at face of chamber.
21.	38	Joseph Tigue.	Driver.	19	S.		Fairmount shaft.	Pittston township.	Fatally injured by being squeezed between car and pillar; died October 25, 1891.
28.	39	R. D. Owens.	Runner.	29	S.		Annora tunnel.	Laflin.	Owens and Howey were killed by a fall of top rock on the heading road while going for a car.
28.	40	James Howey.	Driver.	19	S.				
28.	41	Michael Lallie.	Laborer.	24	S.		Black Diamond shaft.	Luzerne borough.	Killed by a fall of checker coal.
Oct. 2.	42	Thomas Smith.	Miner.	30	S.		Hallstead shaft.	Duryea.	Fatally injured by fall of rock.
7.	43	Joseph Merkutisky.	Laborer.	30	S.		Schooly shaft.	Exeter.	Fatally injured by a car; died the next day.
12.	44	William Tigue.	Door boy.	15	S.		Columbia shaft.	Marcy township.	Fatally injured by a runaway trip of cars; died the next day.
15.	45	Thomas Dollan.	Runner.	19	S.		Babylon shaft.	Duryea.	Instantly killed while going up the shaft in the dark; he was caught by some means unknown and was found in the cage pit at 2.30 o'clock at night; he was working on the night shift.
19.	46	Thomas Kearney.	Runner.	16	S.		Barnum shaft.	Marcy township.	Killed while running a car down grade from head block, the box of car caught the head block throwing the car over on him.
19.	47	Henry Sanders.	Culm driver.	14	S.		Central shaft.	Avoca.	Fatally injured by the falling of the trestling to culm bank; died same night.
24.	48	John Lisefrik.	Laborer.	38	M.	6	Hallstead shaft.	Duryea.	Fatally injured by fall of roof; died next day.
Nov. 3.	49	Wm. Knight.	Laborer.	30	S.		Bennett shaft.	Plains township.	Instantly killed by a blast fired through the pillar.
7.	50	Adam Pudemitor.	Miner.	30	S.		Clear Spring shaft.	West Pittston.	Instantly killed by a premature blast he was about to fire.
9.	51	Cornelius Carey.	Miner.	46	M.	6	Hallstead shaft.	Duryea.	Fatally injured by fall of checker coal; died next day.
10.	52	Thomas James.	Miner.	41	M.	6	Wyoming shaft.	Plains township.	Fatally injured by fall of roof; died on the way home.
16.	53	James Sheriden.	Asst. trackman.	20	S.		Clear Spring shaft.	West Pittston.	Sheriden and Colaginsky were instantly killed by a fall of top rock on chamber road.
16.	54	Joseph Colaginsky.	Laborer.	23	S.				

TABLE IV—*Continued.*

Date of accident.	No. of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	No. of orphans.	Name of Colliery.	Location	Nature and Cause of Accident.
Nov. 18.	55	Joseph Coles.	Miner.	37	M.	. .	Wyoming shaft.	Plains township.	Fatally burned by an explosion of gas; died same day.
30.	56	Wm. Bennett.	Door boy.	14	S.	. .	Shaft No. 9.	Hughestown borough. . .	Fatally injured by being caught between car and pillar.
30.	57	Joseph Bunk.	Laborer.	20	S.	. .	Henry shaft.	Plains township.	Instantly killed by fall of rock.
Dec. 8.	58	John McGuire.	Sinker.	30	S.	. .	Phœnix shaft.	Marcy township.	Killed by falling down the shaft while cutting hitches for buntings.
21.	59	Bernard Rady.	Footman.	35	S.		Exeter shaft.	Exeter.	Instantly killed by ice falling down the shaft on him.
24.	60	Martin Carey.	Driver.	17	S.	. .	Shaft No. 1 Penn'a Co. . .	Hughestown.	Killed by falling under an empty car which he was taking from another driver who had his trip moving.

TABLE V.—*List of Non-Fatal Accidents occurring in and about the Mines of the Third Anthracite Mine District, for the year ending December 31, 1891.*

Date of accident.	Number of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Number of children.	Name of Colliery.	Location.	Nature and Cause of Accident.
Jan. 1.	1	Richard Jones,	Headman,	35	M.		Pettebone shaft,	Kingston township,	Face and hands painfully burned by gas.
2.	2	Malachi Cavanah,	Door boy,	14	S.		Laws shaft,	Pittston township,	Ribs fractured by falling in front of cars.
8.	3	James Dougher,	Runner,	21	S.		Consolidated slope,	do.	Seriously injured by slipping on ice and falling on rail.
12.	4	Anthony Farrington,	Miner,	31	M.	6	Forty Fort shaft,	Forty Fort,	Head and side painfully bruised by premature blast.
12.	5	William Campbell,	do.	40	M.	5	Shaft No. 10,	Hughestown,	Burned by gas at face of chamber.
13.	6	Frank Frisko,	Laborer,	25	S.		Prospect shaft,	Plains,	Burned by gas while going through abandoned workings.
15.	7	Peter Sewillage,	do.	25	S.		Hillman slope,	do.	Seriously injured by fall of roof while robbing pillars.
15.	8	Charles Annear,	Miner,	36	M.	6	Mill Hollow shaft,	Luzerne borough,	Finger broken by fall of coal.
19.	9	Benjamin Benson,	Laborer,	21	S.		Midvale slope,	Plains,	Face slightly burned by gas.
20.	10	Alvin Brookstraw,	do.	38	M.	3	Delaware shaft,	do.	Hip bruised by fall of rock.
20.	11	Charles McGrady,	Driver,	18	S.		do.	do.	Injured by a kick from a mule.
22.	12	John Walsh,	Miner,	24	S.		Babylon shaft,	Pittston township,	Back bruised by fall of rock.
24.	13	David Shiver,	Pumpman,	25	M.	3	William A. shaft,	Old Forge township,	Painfully bruised by being caught under cage in shaft.
24.	14	Michael Thomas,	Laborer,	32	S.		Prospect shaft,	Plains township,	Burned by gas.
28.	15	Anthony Morris,	Miner,	30	S.		William A. shaft,	Old Forge township,	Face cut by fall of rock.
Feb. 3.	16	John Keating,	Laborer,	18	S.		No. 14 slope,	Jenkins township,	Leg broken by fall of rock while removing a pillar of coal.
4.	17	William Davidson,	Miner,	46	M.		Mill Creek slope,	Plains township,	Leg broken by fall of coal.
5.	18	John Cavanaugh,	do.	45	M.	9	No. 1 shaft,	Hughestown,	Back and shoulders painfully bruised by fall of rock.
6.	19	Thomas Murphy,	do.	28	M.	3	Midvale slope,	Plains township,	Back and neck burned by gas.
6.	20	E. A. Price,	Mine boss,	39	M.	6	Prospect shaft,	do.	Foot painfully bruised by spider of drum falling on him.
7.	21	Luke Michael,	Headman,	23	S.		Mount Lookout shaft,	Wyoming,	Wrist broken by a premature explosion of dynamite.
9.	22	Joseph Jack,	Miner,	28	M.	1	Prospect shaft,	Plains township,	Ankle dislocated by fall of coal.
10.	23	John McNamarra,	Laborer,	18	S.		No. 9 shaft,	Hughestown,	Hips bruised by fall of rock.
16.	24	James Chauncy,	Miner,	30	M.	1	Black Diamond shaft,	Luzerne borough,	Painfully injured by a premature blast.
17.	25	Joseph Carden,	do.	38	M.	2	No. 13 shaft,	Old Forge township,	Painfully bruised by fall of coal and rock.
18.	26	George Bartlett,	do.	23	M.		Babylon shaft,	Duryea,	Hips and shoulder bruised by fall of coal.
20.	27	Charles Titley,	do.	45	M.		Twin shaft,	Pittston,	Titley, and Peskie, his laborer, while in the act of barring down some loose coal in their chamber, a fall of rock came on them, injuring Titley seriously and Peskie slightly.
20.	28	Joseph Peskie,	Laborer,	35	M.				
20.	29	Martin Haggerty,	Company man,	50	M.	5	Schooly shaft,	Exeter,	Leg bruised by being caught between car and rib.
20.	30	Anthony Petro,	Miner,	40	M.		Clear Spring shaft,	Pittston,	Injured by a fall of rock.
Mar. 2.	31	John C. Herbert,	do.	25	S.		Jermyn No. 2 shaft,	Old Forge township,	Back bruised by fall of soapstone.

TABLE V—*Continued.*

Date of accident.	Number of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Number of children.	Name of Colliery.	Location.	Nature and Cause of Accident.
Mar. 9.	32	Frank Dohern. . . .	Engineer. . .	40	M.	. .	Maltby outside. . . .	Kingston township. .	Arm broken by balance weight of rope falling on it.
10.	33	Wilson Drisback. . .	Laborer. . . .	40	M.	1	Prospect shaft. . . .	Plains township. . .	Hand painfully bruised by being caught between timber.
11.	34	Thomas Farrell. . . .	Miner.	43	M.	1	No. 1 shaft.	Hughestown.	Leg severely cut by fall of rock.
16.	35	John Davis.	Laborer. . . .	24	S.	. .	Keystone slope. . . .	Plains township. . .	Ear badly lacerated by fall of coal.
22.	36	Thomas Daley. . . .	Miner.	. .	S.	. .	Bernice drift.	Bernice.	Severely bruised by fall of rock.
25.	37	Michael Laven. . . .	do.	55	M.	6	Bennett shaft.	Miners Mills.	Arm broken by fall of rock.
28.	38	John Hopper.	do.	. .	M.	. .	Jermyn No. 2 shaft. . .	Old Forge township. .	Severely bruised by fall of rock.
Apr. 11.	39	Robert Barr.	Spragger. . . .	13	S.	. .	Jermyn No. 2 breaker. .	do. do.	Thigh painfully bruised by being caught between bumpers of car while coupling.
15.	40	John Monahan. . . .	Runner. . . .	21	S.	. .	Babylon shaft.	Duryea.	Ankle broken by being caught between cars.
16.	41	Albert Perkins. . . .	Miner.	38	S.	. .	Prospect shaft.	Plains township. . .	Face and hands painfully burned by gas.
21.	42	Mathew Dono. . . .	do.	30	M.	. .	Schooly shaft.	Exeter.	Arm broken by fall of rock.
24.	43	David Bartlett. . . .	do.	23	M.	. .	No. 9 shaft.	Hughestown.	Face and hands painfully burned by powder he was handling.
24.	44	Charles Richardson. .	Laborer. . . .	23	S.	. .	Sibley shaft.	Old Forge township. .	Severely injured by fall of rock.
25.	45	Robert Bestford. . . .	Miner.	53	M.	4	East Boston shaft. . . .	Kingston.	Back and shoulder bruised by fall of rock.
29.	46	Thomas H. Lewis. . .	Plane runner.	24	S.	. .	Annora tunnel. . . .	Laflin.	Two fingers taken off by being caught between car and brake lever.
May 1.	47	Alfred Dolan.	Slate picker. . . .	. .	S.	. .	Clear Spring breaker. .	Pittston.	Head severely injured by falling down the stairs of breaker.
2.	48	Michael Yarmor. . . .	Miner.	32	M.	2	Jermyn No. 2 shaft. . .	Old Forge township. .	Leg broken while mining out a shot by coal falling on him.
6.	49	W. J. Eslick.	do.	35	M.	2	East Boston shaft. . . .	Kingston township. .	Head severely cut by falling coal.
9.	50	John Tool.	Laborer. . . .	55	M.	9	Bennett shaft.	Miners Mills.	Leg fractured by fall of rock.
9.	51	Samuel Toney.	do.	26	S.	. .	Dunn shaft.	Old Forge township. .	Burned severely by powder while showing another man how to handle it with care.
11.	52	Thomas Gerrighty. .	do. . . .	34	M.	4	Hoyt shaft.	Jenkins township. . .	Severely injured while running a car out of his chamber.
12.	53	Archie Lindsay. . . .	Company man.	52	M.	6	Henry shaft.	Plains township. . .	Leg broken by being struck by a car while standing too close to the track.
12.	54	Charles Schultz. . . .	Laborer. . . .	30	S.	. .	Babylon shaft.	Duryea.	Leg broken and otherwise severely injured by fall of rock.
15.	55	George King.	do.	35	M.	2	No. 14, tunnel No. 1. . .	Jenkins township. . .	Leg broken by fall of rider coal.
18.	56	Martin Kouskin. . . .	do.	31	S.	. .	Prospect shaft.	Plains township. . .	Face and hands painfully burned by gas.
26.	57	Edward Ellet.	Driver.	18	S.	. .	Jermyn No. 2 shaft. . .	Old Forge township. .	Painfully squeezed by being caught between car and pillar.
June 1.	58	Michael Mealey. . . .	Miner.	54	M.	3	No. 6 shaft.	Jenkins township. . .	Head severely cut and bruised by a premature blast.

June	2.	59	William Mock.	do.	33	M.	2	Keystone slope.	Plains township.	Arm painfully cut and bruised; while tamping a hole the powder exploded.
	4.	60	John Ayers.	Carpenter.	35	M.	3	Prospect breaker.	do.	Ayers and Verteller were severely bruised on the trestling of the breaker by a trip of cars coming to the dump.
	4.	61	Andrew Verteller.	Laborer.	30	M.	2			
	5.	62	Patrick Shea.	Miner.	45	M.	4	Babylon shaft.	Duryea.	Back severely injured by fall of rock.
	6.	63	John Moran.	Runner.	20	S.		Delaware shaft.	Plains township.	Arm broken by being caught between car and props while running a car.
	8.	64	Thomas Hodson.	Driver.	15	S.		Langcliffe shaft.	Avoca.	Jaw broken and shoulder dislocated by being struck by a car.
	10.	65	Mike Polander.	Miner.	35	M.		East Boston shaft.	Kingston township.	Arm severely cut by rock falling from the roof.
	12.	66	George Miller.	Driver.	14	S.		William A breaker.	Old Forge township.	Leg broken and arm severely crushed by being run over by cars.
	12.	67	Patrick McGee.	Helper.	16	S.		Clear Spring shaft.	Pittston.	Leg broken by being struck by the rope when crossing the slope while hoisting.
	15.	68	Anthony Garrahan.	Miner.	40	M.	6	Henry shaft.	Plains township.	Back severely injured by fall of rock.
	15.	69	John Milligan.	Helper.	15	S.		Midvale slope.	do.	Head squeezed by being caught between cars while coupling.
	19.	70	Patrick Garrett.	Miner.	50	M.	7	Laws shaft.	Pittston.	Head and back severely bruised by fall of coal.
	19.	71	John F. Crocker.	do.	26	M.	1	East Boston shaft.	Kingston township.	Arm broken by fall of slate.
	20.	72	Thomas Gerrighy.	do.	34	M.	4	Hoyt shaft.	Jenkins township.	Seriously injured by a premature blast.
	23.	73	Jacob Bepecki.	Laborer.	24	S.		Delaware shaft.	Plains township.	Seriously injured by a fall of bony coal.
	23.	74	James Gaughen.	Miner.	53	M.	6	No. 1 shaft.	Hughestown.	Leg broken by a fall of bony coal.
	25.	75	James Murphy.	do.	36	M.	6	Columbia shaft.	Marcy township.	Painfully injured by slipping and falling on coal in his chamber.
	25.	76	Joseph Davis.	Slatepicker.	13	S.		Pettebone breaker.	Kingston township.	Wrist broken by falling down the steps of breaker.
	25.	77	Patrick Ryan.	Runner.	22	S.		Prospect shaft.	Plains township.	Face burned by gas.
	26.	78	Paul Ward.	Driver.	17	S.		Consolidated slope.	Avoca.	Collar bone broken by being caught between car and prop.
	29.	79	Albert Southwell.	Door boy.	16	S.		Maltby shaft.	Kingston township.	Leg cut and bruised by being caught between cars.
July	1.	80	Evan R. Jones.	Miner.	37	M.	4	Babylon shaft.	Duryea.	Leg broken by a fall of rock.
	1.	81	Michael O'Brien.	Door boy.	15	S.		Consolidated.	Avoca.	Wrist broken by being caught between car and roof.
	2.	82	Patrick Laugherty.	Miner.	48	M.	7	Old Forge shaft.	Old Forge township.	Two ribs broken by fall of roof.
	2.	83	Michael McAndrew.	do.	30	M.	2	do	do.	Hips severely bruised by same fall of roof that injured Laugherty.
	3.	84	John Brady.	Laborer.	38	M.	5	No. 5 shaft.	Jenkins township.	Squeezed between cars.
	6.	85	Thomas Hopkins.	do.	26	S.		do.	do.	Leg badly cut by fall of rock.
	9.	86	Joseph Wable.	Miner.	35	S.		Twin shaft.	Pittston township.	Ribs broken and back injured by a premature blast.
	9.	87	John Copskie.	do.	56	M.		Exeter shaft.	Exeter township.	Foot bruised by rock falling on it.
	9.	88	William Reese.	do.	27	M.	2	Hillman slope.	Plains township.	Shoulder and ankle broken by a fall of rock.
	10.	89	Thomas McCue.	Brattice man.	23	S.		Twin shaft.	Pittston township.	Back bruised by a fall of rock.
	11.	90	Michael Kenney.	Runner.	23	S.		Schooley shaft.	Exeter township.	Squeezed between cars.
	13.	91	John Pealpark.	Laborer.	27	M.	2	East Boston breaker.	Kingston township.	Feet painfully burned while cleaning under the boilers.
	15.	92	James Rosser.	Miner.	47	M.	6	Jermyn No. - shaft.	Old Forge township.	Leg broken by a fall of rock.
	16.	93	William Jones.	Laborer.	16	S.		Annora tunnel.	Laflin township.	Head cut and body bruised by being caught between car and gob.
	22.	94	Hugh Evans.	do.	22	S.		Prospect shaft.	Plains township.	Painfully bruised by falling under mine locomotive.
	23.	95	John Maughen.	Door boy.	14	S.		Langcliffe shaft.	Avoca.	Head squeezed by being caught between car and roof.
	29.	96	John Gilley.	Company man.	50	M.	2	Schooly shaft.	Exeter.	Leg broken while holding the door open for the trip to go through, a car jumped the track.
	30.	97	Edward McGroarty.	Miner.	45	M.	5	Black Diamond shaft.	Luzerne borough.	Leg bruised by fall of rock.
	30.	98	Frank Oatfield.	Laborer.	30	M.	4	Mill Hollow shaft.	do.	Back cut and bruised by a fall of rock.
	31.	99	Thomas Murray.	Miner.	60	M.	4	Jermyn No 2 shaft.	Old Forge township.	Arm bruised by a fall of rock.
Aug.	1.	100	Sidney Bulford.	Slatepicker.	13	S.		Stevens breaker.	Exeter.	Wrist dislocated and arm broken by falling from the breaker while looking for birds' nests.
	8.	101	John Moville.	Miner.	40	M.	3	Black Diamond shaft.	Luzerne borough.	Body bruised by coal flying from blast.

5-12-91.

TABLE V—*Continued.*

Date of accident.	No. of accident.	NAME OF PERSON	Occupation.	Age.	Married.	No. of children.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
Aug. 11.	102	Michael Farley.	Miner.	45	M.	2	Pettebone shaft.	Kingston township.	Farley and Sweeney were burned on face and hands by an explosion of gas.
11.	103	Thomas Sweeney.	do.	50	M.		do.	do.	
17.	104	Isaac Hopper.	Runner.	15	S.		Jermyn No. - Shaft.	Old Forge township.	Thumb crushed while spragging a car, necessitating amputation.
18.	105	William G. Griffith.	Miner.	38	M.	6	Prospect shaft.	Plains township.	Face and hands burned by gas.
21.	106	Anthony Dudock.	Laborer.	30	S.		Black Diamond shaft.	Luzerne borough.	Collar bone broken by a fall of rock.
21.	107	Thomas Dolphin.	Driver.	15	S.		Barnum No. 2 shaft.	Marcy township.	Leg broken by a mule falling on him.
22.	108	Richard McCluski.	Miner.	33	M.	6	Midvale slope.	Plains township.	Face and hands burned by gas.
22.	109	Stanley Kerooski.	Company man.	25	M.	3	Jermyn No. 2 breaker.	Old Forge township.	Fingers badly bruised while spragging cars.
22.	110	Joseph Callaghen.	Helper.	14	S.		Maltby breaker.	Kingston township.	While coming from the shaft to the breaker with trip of cars he jumped off to sprag the car, and stumbled and fell under them receiving serious injuries.
28.	111	Frank Burgess.	Driver.	16	S.		Barnum No. 1 shaft.	Marcy township.	Ankle dislocated by falling under car.
31.	112	Andrew Kelley.	Slatepicker.	12	S.		Consolidated breaker.	Avoca.	Foot badly bruised by being caught between sett screw on shaft and floor.
31.	113	John Walsh.	Miner.	45	M.	6	No. 10 shaft.	Hughestown.	Ribs broken and head badly cut by a premature blast.
Sept. 1.	114	Patrick Hamlin.	Driver.	15	S.		Laws shaft.	Pittston township.	Dislocation of the knee joint by falling under cars.
2.	115	William Norris.	Miner.	30	M.	1	Mt. Lookout shaft.	Wyoming.	Collar bone broken by a premature blast.
4.	116	David Griffith.	do.	50	M.		Laurel Run slope.	Parsons.	Ribs fractured by a premature blast.
5.	117	James Fearick.	do.	57	M.		Butler shaft.	Pittston township.	Leg badly cut by fall of top coal.
9.	118	Michael Prinitur.	Laborer.	28	S.		Babylon shaft.	Duryea.	Hips and back bruised by fall of roof.
10.	119	William Bradbury.	Helper.	14	S.		Hallstead shaft.	do.	Leg broken while coupling cars.
10.	120	Edward Hart.	Miner.	25	S.		No. 4 slope.	Jenkins township.	Chest badly bruised by fall of top rock.
11.	121	John Gulishock.	Laborer.	23	S.		Langcliffe shaft.	Avoca.	Leg broken by fall of coal.
14.	122	John Manwaring.	Fire boss.	63	M.	7	Babylon shaft.	Duryea.	Seriously injured by being run over by cars.
14.	123	Hugh L. Thomas.	Miner.	38	M.	2	Annora tunnel	Laflin.	Hip dislocated by fall of rock.
16.	124	Andrew Bennie.	Driver.	17	S.		Old Forge shaft.	Old Forge township.	Leg broken by fall of top rock.
18.	125	William Schrank.	Miner.	22	M.	1	Clear Spring shaft.	Pittston.	Seriously burned on face and hands by an explosion of gas.
22.	126	Anthony McAndrew.	Driver.	16	S.		Old Forge shaft.	Old Forge township.	Leg broken by falling under cars.
23.	127	William Maloney.	do.	15	S.		Ravine cunnel.	Pittston.	Leg badly cut by falling in front of a car.
23.	128	Walter Burk.	Miner.	32	S.		Twin shaft.	do.	Face and hands burned by gas in his chamber.
24.	129	Joseph Zembuski.	do.	32	M.	2	Schooley shaft.	Exeter.	Seriously burned by gas.
25.	130	Evan Thomas.	Asst. driver.	16	S.		Wyoming shaft.	Plains township.	Seriously kicked by a mule.
30.	131	Francis Mullen	Laborer.	22	S.		Greenwood.	Lackawanna township	Arm broken and seriously cut in face by being shot through pillar by carelessness of miner.
Oct. 3.	132	William Prynn.	Miner.	30	M.	1	East Boston shaft.	Kingston township.	Head and back severely cut and bruised by a premature blast.
3.	133	Thomas Davis.	Door boy.	14	S.		Jermyn No. 2 shaft.	Old Forge township.	Head severely injured by falling on a piece of rock.

3,	134	Thomas Lewis,	Propman,	50	M.	4	Pine Ridge shaft,	Miners Mills,	Cheek bone fractured by a prop falling on him.
3,	135	John Lavell,	Miner,	30	M		do.	do.	Hip severely injured by a fall of coal.
5,	136	Otto Olson,	do.	27	S.		Midvale slope,	Plains township,	Face and hand painfully burned by gas.
5,	137	Patrick Hawley,	do.	42	M.		No 5 shaft,	Jenkins township,	Thigh broken by fall of rock.
5,	138	John Sibaliski,	do.	32	M.	2	Stevens slope,	Exeter,	Back and legs severely bruised by rock sliding down chamber on him.
6,	139	Laurance Connor,	do.	54	M.	2	Keystone slope,	Plains township,	Severely bruised and cut by coal flying from a runaway car on slope.
6,	140	Thomas Corrigan,	Driver,	18	S.		Butler shaft,	Pittston township,	Severely injured, found in a car. He could not tell how he was hurt.
6,	141	Charles Marchilonas,	Miner,	42	M.	3	Twin shaft,	do.	Skull fractured by a blast.
8,	142	John Tool,	do.	56	M.		Greenwood shaft,	Lackawanna twp.,	Leg broken by fall of rock.
13,	143	Thomas Burke,	Laborer,	24	S.		do.	do.	Arm broken by fall of rock.
13,	144	Matthew McConnell,	Miner,	56	M.	1	Delaware shaft,	Plains township,	Hand severely bruised while barring down rock.
14,	145	Enoch Dudik,	do.	24	S.		Mount Lookout shaft,	Wyoming,	Arm broken by fall of coal.
14,	146	George Kennedy,	Door boy,	15	S.		Keystone slope,	Plains township,	Small bone of leg broken; fell while getting on cars.
15,	147	Ephraim Brown,	Driver,	18	S.		Hallstead shaft,	Duryea,	Leg bruised by being caught between cars.
16,	148	Andrew Ordors,	Laborer,	25	S.		do.	do.	Leg broken and ankle dislocated by a prop falling on him.
17,	149	William Towkins,	Runner,	21	S.		Pettebone shaft,	Kingston township,	Hips and shoulders severely bruised by being caught between car and cage.
17,	150	John Baird,	Laborer,	33	S.		do.	do.	Legs bruised by being caught between cars.
20,	151	Anthony McCue,	Driver,	16	S.		No. 4 shaft,	Jenkins township,	Legs bruised by car jumping the track on him.
22,	152	Peter Kennedy,	do.	19	S.		Twin shaft,	Pittston,	Legs broken by falling from a car.
27,	153	James Dale,	Miner,	28	M.		Halstead shaft,	Duryea,	Arm bruised by fall of coal.
Nov. 4,	154	Frank Drumbosky,	Miner,	29	S.		Wyoming shaft,	Plains township,	Face and hands burned by gas.
4,	155	Owen McCabe,	Driver,	17	S.		Delaware shaft,	do.	Seriously injured by being crushed under cars.
4,	156	Mike Walsh,	Runner,	20	S.		do.	do.	Hand painfully injured; while spragging a car caught it in the wheel.
6,	157	James Davis,	Miner,	30	M.	3	Jermyn No. 2 shaft,	Old Forge township,	Leg broken by coal flying from a blast
7,	158	Thomas J. Davis,	do.	30	S.		do.	do.	Ankle dislocated by fall of rock.
16,	159	William Jones,	Driver,	13	S.		Barnum breaker,	Marcy township,	Elbow dislocated by falling under car.
17,	160	James Monahan,	Miner,	52	M.		Hallstead shaft,	Duryea,	Wrist broken while standing at foot of shaft to go up, by coal falling down shaft.
17,	161	Peter Dougherty,	Driver,	16	S.		Henry shaft,	Plains township,	Painfully squeezed between car and pillar.
17,	162	John Lisco,	Laborer,	28	M.	2	Mount Lookout shaft,	Wyoming,	Leg seriously crushed by rock sliding down against him; necessitating amputation.
18,	163	James Sanders,	Miner,	60	M.	1	Wyoming shaft,	Plains township,	Painfully bruised by being thrown by an explosion of gas.
20,	164	John Leppert,	do.		M.		Chapman shaft,	Pittston township,	Injured by a fall of bone.
23,	165	John Falley,	Laborer,	34	M.		Mill Hollow shaft,	Luzerne borough,	Leg broken by coal sliding down the pitch on him.
23,	166	Frank Check,	Driver,	17	S.		Langcliffe shaft,	Avoca,	Leg broken by being caught between oil box on car and rail.
23,	167	David Jenkins,	Miner,		M.		Butler shaft,	Pittston township,	Painfully burned by gas.
23,	168	Frank Bocker,	Laborer,	45	M.	5	Babylon shaft,	Duryea,	Both legs broken by fall of top rock.
25,	169	Williard Fetzer,	Miner,		M	1	East Boston shaft,	Kingston township,	Head and shoulder painfully bruised by fall of slate.
25,	170	Peter Doran,	Runner,	19	S.		Wyoming shaft,	Plains township,	Bruised by falling under car.
26,	171	Stanley Thomas,	Laborer,	32	S.		East Boston shaft,	Kingston township,	Seriously injured while riding up the slope against orders; he was caught between car and roof.
28,	172	William Morgan,	do.	25	S.		Black Diamond shaft,	Luzerne borough,	Leg seriously crushed by fall of rock, necessitating amputation.
28,	173	Thomas Curley,	Driver,	15	S.		Avoca shaft,	Avoca,	Arm broken by falling under moving cars.
30,	174	John Goad,	Miner,	50	S.		Mill Hollow shaft,	Luzerne borough,	Leg broken by fall of coal.
Dec. 1,	175	George Bumby,	Miner,	55	M.	6	Schooley shaft,	Exeter,	Seriously injured by a premature blast.
2,	176	John Jefferson,	Laborer,	52	M.	6	Delaware outside shaft,	Plains township,	Ribs and shoulder broken by prop timber while unloading it from a car.
8,	177	Stanley Goshey,	Slatepicker,	13	S.		Wyoming breaker,	do.	Ankle sprained while wrestling with another boy.

TABLE V—*Continued.*

Date of accident.	Number of accident.	NAME OF PERSONS.	Occupation.	Age.	Married.	Number of children.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
Dec. 9.	178	Paul Wright.	Miner. . . .	40	M.	2	Keystone slope. . . .	Plains township . .	Seriously injured by fall of rock. Wright's laborer, name not known, at same time was injured.
15.	179	Frank Devock. . . .	Laborer. . . .	29	M.	3	Midvale slope.	do. . . .	Face and hands painfully burned by gas.
15.	180	John Williams. . . .	Miner. . . .	62	S. . .		Annora slope.	Laflin.	Arm seriously crushed by fall of rock while knocking out a prop.
15.	181	John Ombosey. . . .	do. . . .	32	M.	4	Black Diamond slope. .	Luzerne borough. .	Ombosey and Dominal, his laborer, were painfully bruised by a fall of rock in their chamber.
15.	182	William Dominal. . .	Laborer. . . .	22	S. . .		do. .	do. .	
16.	183	Walter Condon. . . .	Runner. . . .	18	S. . .		do. .	do. . .	Leg severely cut and bruised by falling from a car and the wheels passing over him.
16.	184	Edward Croons. . . .	Miner. . . .	30	M. . .		Langcliffe slope. . . .	Avoca borou h. . . .	Hands and neck painfully burned by gas.
17.	185	John Mustick. . . .	Laborer. . . .	22	S. . .		Schooley slope.	Exeter borough. . . .	Seriously injured by a blast breaking through pillar; he did not get back far enough.
21.	186	Henry Linnen. . . .	Footman. . . .	23	S. . .		Exeter slope.	do. . . .	Severely injured on the head by ice falling down shaft.
21.	187	Joseph Early. . . .	Driver. . . .	17	S. . .		Prospect slope.	Plains township. . . .	Arm broken by a kick from a mule.
30.	188	Charles Chisler. . . .	Miner. . . .	50	M.	6	Pine Ridge slope. . . .	Miners Mills. . . .	Severely injured by a premature blast he was firing.
31.	189	Edward Burt. . . .	do. . . .	60	M. . .		Delaware slope. . . .	Plains township. . . .	Head painfully cut by a premature blast.

FOURTH ANTHRACITE DISTRICT.

(LUZERNE COUNTY.)

OFFICE OF INSPECTOR OF COAL MINES,
WILKESBARRE, PA., *April 4, 1892.*

HON. THOMAS J. STEWART, *Secretary of Internal Affairs:*

SIR: I have the honor of presenting herewith my annual report as Inspector of mines for the Fourth Anthracite district, for the year 1891.

The number of lives lost was 96, leaving 52 widows and 177 orphans.

The number of serious non-fatal accidents was 168, but many of these were of a slight character.

The total production of coal was 7,639,250.55 tons; of this 7,369,697.65 tons was shipped to the market. The production of coal was 731,541 tons greater than for the year 1890.

The average number of days worked by the breakers was 190.08, being less than two-thirds time. This shows that the producing capacity of this district is about ten millions tons, provided that the breakers work full time.

Several topics of interest to miners are discussed in the report, and the disaster of November 8, at the No. 4 shaft, Nanticoke, is fully described.

A decision of Judge Rice granting an injunction prohibiting the re-erection of a breaker over the No. 4 shaft, Kingston Coal Companys is also presented.

Yours very respectfully,
G. M. WILLIAMS,
Inspector of Mines.

TONS OF COAL MINED DURING THE YEAR 1891.

Lehigh and Wilkesbarre Coal Company,	2,026,497.40
Delaware and Hudson Canal Company,	1,125,402.30
Susquehanna Coal Company,	1,466,446.35
Kingston Coal Company,	759,663.95
Delaware, Lackawanna and Western Railroad Company,	359,515.10
Lehigh Valley Coal Company,	243,973.00
Red Ash Coal Company,	296,877 90
Alden Coal Company,	257,787.25

Plymouth Coal Company,	187,126.05
Parrish Coal Company,	302,867.45
West End Coal Company,	193,333.85
Hanover Coal Company,	137,865.95
Hillman Vein Coal Company,	118,443.00
Newport Coal Company,	65,194.00
A. J. Davis,	98,257.00
Total,	7,639,250.55

CLASSIFICATION OF FATAL AND NON-FATAL ACCIDENTS.

CAUSES OF ACCIDENTS.	Killed or fatally injured.	Seriously injured.
By explosion of carburetted hydrogen gas,	19	41
By falls of roof and coal,	37	54
By falling down shafts,	3	2
Crushed and run over by mine cars,	11	35
By explosions of powder and blasts,	12	13
By miscellaneous causes underground,	6	10
By miscellaneous causes on surface,	8	13
Total,	96	168

NUMBER OF FATAL ACCIDENTS, AND TONS OF COAL PRODUCED PER LIFE LOST.

NAMES OF OPERATORS.	Number of lives lost.	Tons of coal produced per life lost.
Lehigh and Wilkesbarre Coal Company,	22	92,113.5
Delaware and Hudson Canal Company,	8	140,675.2
Susquehanna Coal Company,	30	48,881.5
Kingston Coal Company,	11	69,060.3
Delaware, Lackawanna and Western Railroad Company,	3	119,838.3
Lehigh Valley Coal Company,	3	81,324.3
Red Ash Coal Company,	2	148,438.9
Alden Coal Company,	1	257,787.2
Plymouth Coal Company,	4	46,781.5
Parrish Coal Company,	1	302,867.4
West End Coal Company,	1	193,333.8
Hanover Coal Company,	1	137,865.9
Hillman Vein Coal Company,	4	29,610.7
Newport Coal Company,	1	65,194.0
A. J. Davis,	4	24,564.2
Total,	96	79,575.5

NUMBER OF NON-FATAL ACCIDENTS AND TONS OF COAL PRODUCED PER PERSON SERIOUSLY INJURED.

NAMES OF OPERATORS.	Number of persons injured.	Tons of coal produced per person injured.
Lehigh and Wilkesbarre Coal Company,	41	49,426.7
Delaware and Hudson Canal Company,	15	75,026.8
Susquehanna Coal Company,	55	26,662.6
Kingston Coal Company,	12	63,305.3
Delaware, Lackawanna and Western Railroad Company,	4	89,878.7
Lehigh Valley Coal Company,	13	18,767.0
Red Ash Coal Company,	5	59,375.5
Alden Coal Company,	7	36,826.7
Plymouth Coal Company,	4	46,781.5
Parrish Coal Company,	1	302,867.4
West End Coal Company,	2	96,666.9
Hanover Coal Company,	1	137,865.9
Hillman Vein Coal Company,	1	118,443.0
Newport Coal Company: No non-fatal accidents.		
A. J. Davis,	7	14,036.7
Total,	168	45,471.7

NUMBER OF FATAL, NON-FATAL AND SERIOUS INJURIES, AND TONS OF COAL PRODUCED PER EACH PERSON INJURED OR KILLED.

NAMES OF OPERATORS.	Number of killed and injured.	Tons of coal produced per person injured or killed.
Lehigh and Wilkesbarre Coal Company,	63	32,166.6
Delaware and Hudson Canal Company,	23	48,930.5
Susquehanna Coal Company,	85	17,252.3
Kingston Coal Company,	23	33,028.8
Delaware, Lackawanna and Western Railroad Company,	7	51,359.2
Lehigh Valley Coal Company,	16	15,248.3
Red Ash Coal Company,	7	42,411.1
Alden Coal Company,	8	32,223.4
Plymouth Coal Company,	8	23,390.7
Parrish Coal Company,	2	151,433.7
West End Coal Company,	3	64,444.6
Hanover Coal Company,	2	68,932.9
Hillman Vein Coal Company,	5	23,688.6
Newport Coal Company,	1	65,194.0
A. J. Davis,	11	8,932.3
Total,	264	28,872.3

In addition to the preceding number of non-fatal accidents, seventy-four were reported as very slightly injured, and were not included in the list of serious accidents. Three fatal accidents were also reported which were not attributable to the work of mining or preparing coal and they were not included in the list of fatal mining accidents.

The number of widows was fifty-two, who had altogether one hundred and seventy-seven children, under the age of twenty-one years.

CONDITION OF THE COLLIERIES.

During the year 1891, the condition of the mines generally was improved. The damaging effects of the numerous caves that occurred in the year 1890 were repaired and the workings were generally restored to a safer condition.

The aggregate quantity of air entering and circulating through the mines is less than was circulating last year, but the quantity is still ample to effect good ventilation.

We may expect the ventilation to become less as the workings extend. It is the natural result of increased resistance to the passage of the air through the lengthened passages of the mines.

In several mines of this district large fans are used exclusively to ventilate the workings of exhausted coal seams. Inasmuch as no persons are employed in those workings, the quantity of air currents produced is not reported to the Inspector and is not included in his table of ventilation. In the report of ventilation for 1890 for the Hollenback colliery, 367,565 cubic feet were reported in the intake, while for the same colliery this year, the quantity reported for the intake is only 61,184 cubic feet per minute. This difference arises from the fact that work was abandoned in the Baltimore and Hillman seams, and the shaft was sunk to the Ross and Red Ash seams, in which there are only a few persons yet employed. But while a large quantity of air enters the mine, only that portion which ventilates the Ross and Red Ash seams, where persons are employed, is reported. The quantity of air circulating through the workings of the abandoned seams remains nearly as large as it was when work was done therein. The Table A shows the ventilation of working seams only.

With the exception of two or three collieries, the mines of this district are in good condition, and those which are not, are so on account of the existence of either fires or squeezes. A fire or squeeze invariably complicates the situation and jeopardizes the safety of a mine. There are three mines in this district at present affected in this manner and are not in condition to work, only such as is necessary to remove the danger and repair the damage done to the workings.

Nearly all the mines are more or less gaseous, and the roof or rock overlying the coal seams, in the deepest portion of the basins, is weaker and more liable to "falls." The deeper portions of the basins are more dangerous for mining generally. The temperature is higher, which makes it more difficult to ventilate. The bottom heaves, the top is more brittle, and a much larger quantity of explosive gases issue from the strata.

TABLE A.—*Showing the quantity of Air Circulating through the mines of the Fourth Anthracite District at the close of the year 1891.*

NAME OF MINE.	NAME OF OPERATOR.	Number of fans.	Number of persons employed in the mines.	Number of separate splits of air currents.	Cubic feet of air per minute at the inlets.	Cubic feet of air per minute at face of the workings.	Cubic feet of air per minute at the outlet.
1 Diamond,*	Lehigh and Wilkesbarre Coal Company.	1					
2 Hollenback,	" " "	2	67	2	61,184	51,000	63,176
3 Empire,	" " "	2	583	6	220,120	131,670	220,640
4 Stanton,	" " "	3	154	8	232,430	153,820	270,200
5 South Wilkesbarre,	" " "	1	148	4	138,966	104,685	180,690
6 Jersey No. 8,	" " "	2	256	6	111,986	89,675	138,004
7 Sugar Notch No. 9,	" " "	3	378	10	310,600	217,500	321,300
8 Lance No. 11,	" " "	1	378	7	170,605	141,680	205,500
9 Nottingham No. 15,	" " "	2	713	9	217,640	186,170	317,000
10 Reynolds No. 16,	" " "	1	343	6	90,900	58,300	94,300
11 Wanamie No. 18,	" " "	1	162	5	55,000	46,400	93,550
12 Wanamie No. 19,	" " "	1	183	3	75,300	57,300	98,100
13 Baltimore tunnel,	Delaware and Hudson Canal Company.	1	178	4	229,000	118,100	230,000
14 Baltimore shaft No. 2,	" " "	1	160	3	79,950	26,600	104,500
15 Baltimore shaft No. 3,	" " "	1	111	2	80,415	68,867	92,305
16 Conyngham Hillman,	" " "	1	53	3	77,820	73,655	87,928
17 Conyngham Baltimore,†	" " "	1					
18 No. 2 Plymouth,	" " "	1	144	3	49,100	49,000	49,400
19 No. 3 Plymouth,	" " "	1	215	5	72,445	61,750	71,490
20 No. 4 Plymouth,	" " "	1	114	2	36,620	26,520	36,640
21 No. 5 Plymouth,	" " "	1	223	5	90,000	87,670	93,000
22 Boston,	" " "	1	146	5	54,975	49,865	59,075
23 No. 1 slope,	Susquehanna Coal Company.	1					
24 No. 2 slope,	" "	2	366	4	110,000	89,500	116,000
25 No. 3 slope,	" "		25	2	34,200	32,800	35,040
26 No. 4 slope,	" "	2	108	4	199,470	53,000	215,020
27 No. 4 tunnel,‡	" "	1					
28 No. 1 shaft G. V.,	" "	1	68	2	18,960	14,340	19,430
29 No. 1 shaft F. V.,	" "	2	300	6	98,054	85,074	218,000
30 No. 1 shaft Lee V.,	" "	2	314	5	105,340	99,250	112,600
31 No. 2 shaft,	" "	3	520	7	151,410	122,780	162,738
32 No. 6 shaft,	" "	1	290	3	82,000	60,000	84,000
33 No. 6 slope,	" "	1	194	3	54,000	51,000	102,000

* Ventilating exhausted workings. † Not working this year. ‡ Robbing pillars and ventilation cannot be accurately measured.

TABLE A—*Continued.*

NAME OF MINE	NAME OF OPERATOR.	Number of fans.	Number of persons employed in the mines.	Number of separate splits of air currents.	Cubic feet of air per minute at the inlets.	Cubic feet of air per minute at the face of the workings.	Cubic feet of air per minute at the outlet.
34 No. 6 tunnel	Susquehanna Coal Company	1	216	2	83,850	65 770	85,700
35 No. 1 shaft	Kingston Coal Company	1	132	4	83,022	73,765	100,603
36 No. 2 shaft	" "	1	126	3	49,300	35,600	51,450
37 No. 3 shaft	" "	1	82	2	27,470	20,250	28,170
38 No. 4 shaft	" "	1	92	6	114,155	75,906	128,580
39 Gaylord shaft and slope	" "	1	340	8	218,000	157,000	221,500
40 Avondale	Del., Lackawanna and Western Railroad Co.	1	281	8	124,230	109,070	140,250
41 Woodward Nos. 1 and 2	" " "	2	232	10	299,278	290,520	352,853
42 Dorrance	Lehigh Valley Coal Company	2	129	7	274,608	120,601	298,524
43 Franklin (three slopes)	" "	3	239	8	128,838	124,714	130,931
44 Red Ash No. 1	Red Ash Coal Company	1	184	5	81,125	75,200	84,000
45 Red Ash No. 2	" "	1	257	5	62,339	55,119	68,093
46 Alden	Alden Coal Company	2	408	5	155,050	103,120	189,730
47 Dodson	Plymouth Coal Company	1	219	5	90,235	77,570	90,920
48 Hillman vein	Hillman Vein Coal Company	1	187	4	150,860	142,810	153,460
49 Maffet	Hanover Coal Company	2	182	4	85,000	71,500	122,000
50 Parrish	Parrish Coal Company	2	320	6	180,400	138,000	180,500
51 West End No. 1 drift	West End Coal Company	1	157	2	96,920	36,200	132,330
52 West End Conyngham D	" "	1	68	1	17,475	14,600	19,625
53 Warrior Run	A. J. Davis	1	173	4	95,140	44,420	98,000
54 Lee	Newport Coal Company		96	3	45,500	26,250	51,700
Total		73	11,012	237	5,771,285	4,266,156	6,625,545

EXAMINATION OF APPLICANTS FOR CERTIFICATES OF QUALIFICATION FOR THE POSITIONS OF MINE FOREMAN AND ASSISTANT MINE FOREMAN.

The act of June 3, 1891, made it unlawful for any person to act as mine foreman or assistant mine foreman of any coal mine or colliery unless he is "registered as holder of a certificate of qualification or service under this act." This made it necessary for all who had obtained certificates under the act of 1885, to procure others under the act of 1891. This act required also that every person acting as assistant mine foreman should be the holder of a certificate of qualification. For the purpose of holding the annual examination, the board of examiners of this dictrict, consisting of G. M. Williams, Inspector of mines, W. A. Lathrop, superintendent of mines, and John T. Lewis, miner, met on July 6, and continued in session for ten days for the purpose of examining applicants for said certificates. One hundred and twelve persons who held certificates under the act of 1885, applied and were recommended to have certificates under the present act. One hundred and eighty-one were recommended to have certificates of qualification for assistant mine foreman and twenty new applicants appeared before the board for examination for certificates of qualification as mine foreman of which the following ten were recommended to have certificates awarded them:

John Arnot (now-deceased),	Nanticoke.
Enoch Jones,	Wilkesbarre.
Henry D. Hughes,	Plymouth township.
A. Caswell,	Plymouth township.
Daniel B. Lewis,	Plymouth.
James Roberts,	Plymouth.
Thomas H. Picton,	Plymouth.
John H. Evans,	Plymouth.
William D. Morris,	Plymouth.
William T. Rees,	Alden.

The first named John Arnot was fatally injured in the disaster of November 8, at the No. 1 shaft Nanticoke, and died during the succeeding night.

PILLARS BETWEEN ADJOINING PROPERTIES.

Section ten of article three of the act of June 2, 1891, provides that, "It shall be obligatory on the owners of adjoining coal properties to leave, or cause to be left, a pillar of coal in each seam or vein of coal worked by them, along the line of adjoining property, of such width, that, taken in connection with the pillar to be left by the adjoining property owner, will be a sufficient barrier for the safety of the employes of either mine in case the other should be abandoned and allowed to fill with water; such width of pillar to be determined by the engineers of the adjoining property owners together with the Inspector of the district in which the

mine is situated, and the surveys of the face of the workings along such pillar shall be made in duplicate and must practically agree."

In order to comply with this provision J. F. Snyder, chief mining engineer of the Delaware, Lackawanna and Western Railroad Company, J. H. Bowden, chief mining engineer of the Susquehanna Coal Company, W. J. Richards, chief mining engineer of the Lehigh and Wilkesbarre Coal Company, and G. M. Williams, mine Inspector of this district, met and agreed that all the said pillars as far as related to their companies should be in accordance with the following terms and formulas:

Agreement.

In compliance with the requirements of section ten, article three of the act of June 2, 1891, entitled "An act to provide for the health and safety of persons employed in and about the anthracite coal mines of Pennsylvania, and for the protection and preservation of property connected therewith," it is hereby agreed between the engineers of the . . . . . and of . . . . . and the Inspector of mines of the . . . . . Anthracite district of Pennsylvania, that the barrier pillars to be left, one-half ($\frac{1}{2}$) by each owner, between the workings . . . . . on their adjoining properties, are to be, as nearly as practicable, of the thickness to be determined as follows:

First. That after this date the width of barrier pillar between the workings of adjacent properties is to be five times the thickness of seam mined out from floor to roof at the water drainage level; and that at all points below such level its width shall be equal to the thickness mined out at that point multiplied by one per cent. of the depth below drainage level added to five times the said thickness mined out. Thus: Thickness of workings × one per cent. of depth below drainage level + thickness of workings × 5 = width of barrier pillar. And as further illustrated by the attached table of pillars to be left between adjoining mines of different thicknesses of workings at different depths.

Second. That the water drainage level shall be understood to mean the level at which water would drain off from any abandoned workings, and that where the level is higher in one mine than in an adjoining one the higher level shall be taken, and where there is but one mine opened it shall determine its drainage level, and if the drainage level of a mine subsequently opened upon adjoining lands is higher, the additional thickness required shall be left by the owner of said mines.

Third. That these thicknesses shall be subject to such modifications as may be deemed advisable under varying conditions of the strata and seams due to proximity of other seams, faulty nature of seam or strata or other conditions shown by the development of the workings.

Fourth. That on notice of either party that any modifications of this agreement are desirable a meeting shall be forthwith held to decide the same.

Fifth. That copies of this agreement and modifications thereof shall be furnished the mining superintendents for the instruction and guidance of those in charge of the workings. And there shall be marked on the map used at the mines the formula and such portion of the table as is applicable to the workings.

And it is further agreed that the duplicate surveys and certified map to be furnished the Inspector shall consist of independent maps of surveys made by the engineers of the adjoining properties, each map showing the land line and the workings, stations, monuments, etc., on both properties in the vicinity of division land lines

In witness whereof, the said parties have hereunto set their hands this . . . . . day of . . . . . , A. D. 189 .

. . . . . .

(Signed in triplicate.) . . . . . .

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Copy No. . . . . .

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TABLE OF BARRIER PILLARS *to be left between Adjoining Properties. Depth below water level—all dimensions in feet.*

FORMULA. Thickness of workings × 1 per cent. of depth below drainage level + thickness of workings × 5 = width of barrier pillar.

THICKNESS MINED FROM SEAM.	0	50	100	150	200	250	300	350	400	450	500	550	600	650	700
3.	15	17	18	20	21	23	24	26	27	29	30	32	33	35	36
4.	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48
5.	25	28	30	33	35	38	40	43	45	48	50	53	55	58	60
6.	30	33	36	39	42	45	48	51	54	57	60	63	66	69	72
7.	35	39	42	46	49	53	56	60	63	67	70	74	77	81	84
8.	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96
9.	45	50	54	59	63	68	72	77	81	86	90	95	99	104	108
10.	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
11.	55	61	66	72	77	83	88	94	99	105	110	116	121	127	132
12.	60	66	72	78	84	90	96	102	108	114	120	126	132	138	144
13.	65	72	78	85	91	98	104	111	117	124	130	137	143	150	156
14.	70	77	84	91	98	105	112	119	126	133	140	147	154	161	168
15.	75	83	90	98	105	113	120	128	135	143	150	158	165	173	180
16.	80	88	96	104	112	120	128	136	144	152	160	168	176	184	192
17.	85	94	102	111	119	128	136	145	153	162	170	179	187	196	204
18.	90	99	108	117	126	135	144	153	162	171	180	189	198	207	216
19.	95	105	114	124	133	143	152	162	171	181	190	200	209	219	228
20.	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240
21.	105	116	126	137	147	158	168	179	189	200	210	221	231	242	252
22.	110	121	132	143	154	165	176	187	198	209	220	231	242	253	264
23.	115	127	138	150	161	173	184	196	207	219	230	242	253	265	276
24.	120	132	144	156	168	180	192	204	216	228	240	252	264	276	288
25.	125	138	150	163	175	188	200	213	225	238	250	263	275	288	300

TABLE OF BARRIER PILLARS -*Continued.*

THICKNESS MINED FROM SEAM.	750	800	850	900	950	1,000	1,050	1,100	1,150	1,200	1,250	1,300	1,350	1,400	1,450	1,500
3.	38	39	41	42	44	45	47	48	50	51	53	54	56	57	59	60
4.	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80
5.	63	65	68	70	73	75	78	80	83	85	88	90	93	95	98	100
6.	75	78	81	84	87	90	93	96	99	102	105	108	111	114	117	120
7.	88	91	95	98	102	105	109	112	116	119	123	126	130	133	137	140
8.	100	104	108	112	116	120	124	128	132	136	140	144	148	152	156	160
9.	113	117	122	126	131	135	140	144	149	153	158	162	167	171	176	180
10.	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200
11.	138	143	149	154	160	165	171	176	182	187	193	198	204	209	215	220
12.	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240
13.	163	169	176	182	189	195	202	208	215	221	228	234	241	247	254	260
14.	175	182	189	196	203	210	217	224	231	238	245	252	259	266	273	280
15.	188	195	203	210	218	225	233	240	248	255	263	270	278	285	293	300
16.	200	208	216	224	232	240	248	256	264	272	280	288	296	304	312	320
17.	213	221	230	238	247	255	254	272	281	289	298	306	315	323	332	340
18.	225	234	243	252	261	270	279	288	297	306	315	324	333	342	351	360
19.	238	247	257	266	276	285	295	304	314	323	333	342	352	361	371	380
20.	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400
21.	263	273	284	294	305	315	326	336	347	357	368	378	389	399	410	420
22.	275	286	297	308	319	330	341	352	363	374	385	396	407	418	429	440
23.	288	299	311	322	334	345	357	368	380	391	403	414	426	427	449	460
24.	300	312	324	336	348	360	372	384	396	408	420	432	444	456	468	480
25.	313	325	338	350	363	375	388	400	413	425	438	450	463	475	488	500

Each adjoining owner is to leave one-half of the pillar thickness required.

THE DISCOVERY AND EARLY DEVELOPMENT OF COAL IN THE WYOMING COAL REGION.

The First, Second, Third and Fourth Anthracite inspection districts are entirely embraced in the territory now generally known as the Wyoming coal region. This title originated in the name of that western end of the coal basin known as the Wyoming Valley, where its coal was first discovered and mined. It consists of one large coal basin about 54 miles long and an average of about 3½ miles wide. A deep subsidence, shaped like a huge boat, lying between the Wilkesbarre and Moosic mountains on the south side and the Kingston and Capouse mountains on the north side. The aggregate thickness of coal at the deepest point is about 90 feet, divided into 10 separate seams. The greatest depth is in Hanover township, midway between Wilkesbarre and Nanticoke, where the Red Ash (lowest seam) is 2,200 feet beneath the surface.

A recent thorough investigation of the history of the coal trade of this region, effected by George B. Kulp, Esq., of Wilkesbarre, and promulgated in his pamphlet on "Coal, its Antiquity, Discovery and Eary Development in the Wyoming Valley," read before the "Wyoming Historical and Geological Society," June 27, 1890, shows that the coal trade of this celebrated region commenced as early as the year 1807. Since then this region has supplied to the trade, 321,949,034 tons of coal, and, including that which has been consumed in the region, its total coal production amounts to 390,838,586 tons. For the last eight years, more than one-half of the total production of anthracite coal in this country was supplied from this region.

For many years it was supposed that the anthracite coal trade had its commencement in the year 1820, when 360 tons were shipped to market from the Lehigh region, but through Mr. Kulp's diligent research, it is shown that the two brothers, John and Abijah Smith, of Plymouth, Pa., were the first in point of time to engage and continue the industry of anthracite coal mining in the United States.

They left their home in Derby, Conn., in 1805, to come to Luzerne county, and immediately purchased coal land and engaged in mining coal. Their first ark of coal was shipped in the fall of 1807 to Columbia, Pa., and this was probably the first cargo of anthracite coal that was ever offered for sale in this country.

Prior to 1803, the use of anthracite coal as a fuel was confined almost exclusively to forges and furnaces arranged to apply an air blast, notwithstanding the fact that Oliver Evans had, prior to 1802, demonstrated on several occasions that the artificial blast was not necessary for the consumption of coal in domestic use, he had burned it successfully in an open grate and also in a stove without an artificial draft.

In order to create a market for their coal production, the Smith brothers felt the necessity of instructing the people by demonstrating the practical utility of the stone coal as domestic fuel in each family's

domicile. To effect this and to show the excellent properties of the coal for heating houses as well as for producing heat in forges and furnaces, they themselves accompanied their coal arks to the markets, taking with them a number of grates and a stone mason, and had the grates set in the public houses where the people might see the utility of the fuel and its superiority over wood. Several houses in Columbia and in other towns were thus supplied with grates in which a glowing stone coal fire was kindled and careful instructions given in the mysteries of maintaining the fire. Thus, after much perseverance and expense in demonstrating the valuable qualities of the new fuel, they were successful in disposing of a small portion of their cargo only and the remainder had to be left to be sold on commission. Notwithstanding the thorough manner adopted for the introduction of coal as a fuel for domestic uses, it was only after a strife of several years they were able to gain a profit from the enterprise.

The annual average coal production of the Messrs. Smith from 1807 to 1820 was from six to eight ark loads, equal to 400 to 500 tons.

In the year 1813 Mr. George M. Hollenback sent two ark loads of coal down the Susquehanna taken from his Mill Creek mine near Wilkesbarre.

The same year Joseph Wright of Plymouth, Pa., mined two ark loads of coal from the mines of his brother, the late Samuel G. Wright of New Jersey, which was near Port Griffith in Jenkins township. This was then an old mine opening from which coal had been mined as early as the year 1775.

From 1807 to 1820 the coal trade was small and was carried on through many sore trials. "The men who were engaged in the business were merely able to sustain themselves with the closest economy and the most persevering and unremitting labor." It was mined at several points in the valley at the outcropping of the seams, and was shipped overland by wagons and by the Susquehanna river in arks. In the year 1813 Colonel George M. Hollenback sent two four-horse loads of coal to Philadelphia. James Lee of Hanover sent a four-horse load to a blacksmith in Germantown. In 1814 the late Lord Butler of Wilkesbarre shipped coal from his mines, now generally known as the "Baltimore Mines," and Crandall Wilcox of Plains township was a shipper the same year.

From an editorial article published in *The Gleaner* in Wilkesbarre, and written by the publisher, Hon. Charles Miner, dated November 19, 1813, under the head of "State Policy," in which the author urged, with great zeal, the improvement of the descending navigation of the Susquehanna and Lehigh rivers. Mr. Kulp quotes: "The coal of Wyoming has already become an article of considerable traffic with the lower counties of Pennsylvania. Numerous beds have been opened and it is ascertained, beyond all doubt that the valley of Wyoming contains enough coal for

ages to come." In Chapman's History of Wyoming written, in 1817, we find, when speaking of coal it says: "It constitutes the principal fuel of the inhabitants as well as their most important article of exportation." Plumb, in his History of Hanover Township, says: "From 1810 to 1820 1,000 or 1,500 tons per year were mined in Hanover," and "there was a constant sale of coal down the river by arks from the time people learned to burn it in their houses." Thus it is shown that the coal trade of this region was conducted in a small way continually from 1807 to 1820, when it grew into more importance and continued to grow to the present date. Records show that as early as 1812 Abijah Smith & Co. shipped coal by way of Susquehanna river to Havre de Grace, Maryland, and thence by coasting vessels to New York. The following account current rendered by Price & Waterbury of New York to Abijah Smith & Co., is a remarkably interesting relic of the coal business in its infancy:

"NEW YORK, *February, 1813.*

"Messrs. ABIJAH SMITH & Co.,

"GENTLEMEN: Having lately taken a view of the business we have been conducting for you this sometime past, we have thought it would be gratifying to have the account forwarded, and, therefore, present you with a summary of it up to the 18th of January, 1813, containing, first, the quantity of coal sold, and to whom; second, the amount of cash paid us from time to time; third, the amount of interest cash on the various sums advanced, the credit of interest on sums received, and, lastly, the quantity of coal remaining on hand unsold. Should you on the receipt of this find any of the items incorrect, we need hardly observe that the knowledge of such an error will be corrected with the greatest pleasure.

"As it respects our future plan of procedure we shall expect to see one of your concern in the city sometime in the spring, when a new arrangement may be fixed up. Our endeavors to establish the character of the coal shall not at any time be wanting, and we calculate shortly to dispose of the remaining parcels of coal unsold.

"1812, June 8.	By cash of Doty & Willets, for 5 chaldrons of coal, ...	$100 00
	By cash of John Withington, for 5 chaldrons of coal, ...	100 00
	By cash of Coulthaid & Son, for 10 chaldrons of coal, ...	200 00
	By John Benham's note, 90 days, for 10 chaldrons of coal, ...	200 00
	By cash of G. P. Lorrilard, for 1 chaldron of coal, ...	20 00
	By cash of J. J. Wilson, for 4 chaldrons of coal, ...	80 00
"1812, June 13.	By cash of Doty & Willets, for 5 chaldrons of coal, ...	100 00

"1812, June 13, By cash of G. P. Lorrilard, for 11½ chaldrons of coal,	230 00
By A. Frazyer's note, 90 days, for 25 chaldrons of coal,	475 00
By cash received of T. Coulthaird, for 5 chaldrons of coal,	100 00
By M. Woomas' note, 90 days, for 20 chaldrons of coal,	380 00
By half measurement received for 9 bushels of coal,	6 33
By B. Ward and T. Blagge, for 1¼ chaldrons at $20.00 per chaldron,	25 00
By Wittingham, for one-half chaldron of coal,	10 00
"1812, June 25, By Pirpont, for one-half chaldron of coal,	11 00
By Mr. Landiss, for one-half chaldron of coal,	12 00
"1812, July 16. By Robert Barney for 17½ chaldrons of coal, at $22.00 per chaldron,	385 00
"1812, Sept. 15. By cash, for 1 chaldron of coal,	25 00
"1812, Oct. 9. By William Coleman, for ½ chaldron of coal,	12 50
By Sexton & Williamson, for 1½ chaldrons of coal,	37 50
"1812, Oct. 24. By cash, for 1 chaldron of coal,	25 00
"1812, Oct. 29. By cash, for one-half chaldron of coal,	12 50
"1812, Nov. 7. By cash, for one-half chaldron of coal,	12 50
"1812, Nov. 12. By cash, for one chaldron of coal,	25 00
"1812, Nov. 16. By Mr. A. L. Briton, for 12 chaldrons of coal at $25.00 per chaldron,	288 50
"1812, Dec. 5. By cash, for one-half chaldron of coal,	12 50
"1812, Dec. 11. By cash, A. Daily, for one-half chaldron of coal,	12 50
"1812, Dec. 14. By cash, for one-half chaldron of coal,	12 00
"1813, Jan. 4. By cash for 1 chaldron of coal,	25 00
"1813, Jan. 18. By J. Curtis, for 9 bushels of coal,	6 27
"By amount of balance this day,	763 12
"Total,	$3,601 20

Errors excepted. PRICE & WATERBURY.

It will be seen by this account current that coal was sold at that time by the chaldron, equal to thirty-six bushels, or nearly a ton and one-third per chaldron. The sales, therefore, for the New York market, in 1812, by this firm, were nearly two hundred tons.

In the article referred to by George B. Kulp, Esq., on "Coal, its Antiquity, Discovery and Early Development in the Wyoming Valley," the author further states: "It seems to be the common belief that the anthracite coal trade had its rise on the Lehigh in the year 1820, yet as a matter

of fact the industry was begun at Plymouth thirteen years before, and for nine years prior to the beginning of the coal business on the Lehigh river the annual shipments on the Susquehanna were considerably in excess of the first year's product of the Lehigh region." Mr. Pearce states, that up to 1820 "the total amount of coal sent from Wyoming is reckoned at eighty-five hundred tons," and the same author states that Colonel Washington Lee, in 1820 "mined and sent to Baltimore one thousand tons, which he sold at eight dollars per ton." Coal had been shipped to Baltimore and sold there prior to that date by the Smith Brothers.

Most authors have heretofore recorded the coal shipments of this region as commencing in 1829 when seven thousand tons were shipped by the Delaware and Hudson Canal Company, but they record the production as commencing in 1820, and the product as eight hundred tons.

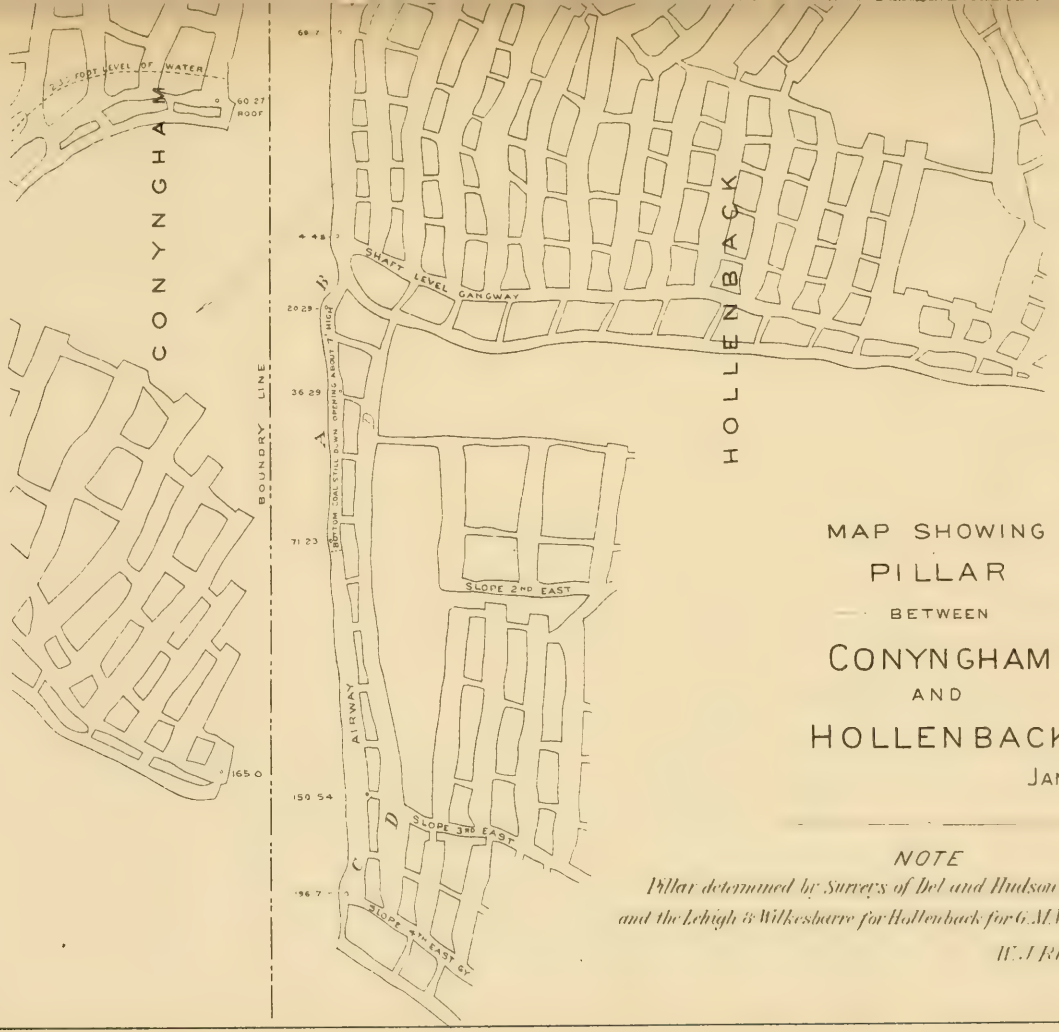
Our author, Mr. Kulp, has shown conclusively that the coal trade had been carried on for several years prior to 1820, and presents the following table as a correct record of the business from the year 1807 to 1820 inclusively:

1807,	Wyoming region,	55 tons.	
1808,	do.	150 tons.	
1809,	do.	200 tons.	
1810,	do.	350 tons.	
1811,	do.	450 tons.	
1812,	do.	500 tons.	
1813,	do.	500 tons.	
1814,	do.	700 tons.	
1815,	Wyoming region,	1,000 tons.	
1816,	do.	1,000 tons.	
1817,	do.	1,100 tons.	
1818,	do.	1,200 tons.	
1819	do.	1,400 tons.	
1820,	do.	2,500 tons.	
Lehigh region,		365 tons.	

The North Branch canal was completed to the Nanticoke dam in 1830, and was opened in 1831. The first boat was "The Wyoming," built by the Hon. John Koons. It was launched and towed to Nanticoke where it was loaded with ten tons of coal, a quantity of flour and other merchandise destined for Philadelphia. The canal being new and not filled with water "The Wyoming" passed through the Nanticoke *chute* and thence down the river to Northumberland where it entered the Susquehanna division of the Pennsylvania canal and proceeded by way of the Union and Schuylkill canals to Philadelphia.

On her return trip she brought back a cargo of dry goods weighing fifteen tons: was frozen in the ice and snow at New Buffalo in January, 1831, and arrived at Wilkesbarre in about three months after the date of her departure. The second boat, "The Luzerne," built on the river bank opposite Wilkesbarre by Captain Derrick Bird, took a cargo of coal to Philadelphia and arrived at the Nanticoke dam on her return trip in July, 1831.

Thus it is sufficiently proven that the shipment of coal from this region commenced earlier than it is generally reported in published statements of the coal productions of the different regions. In the year



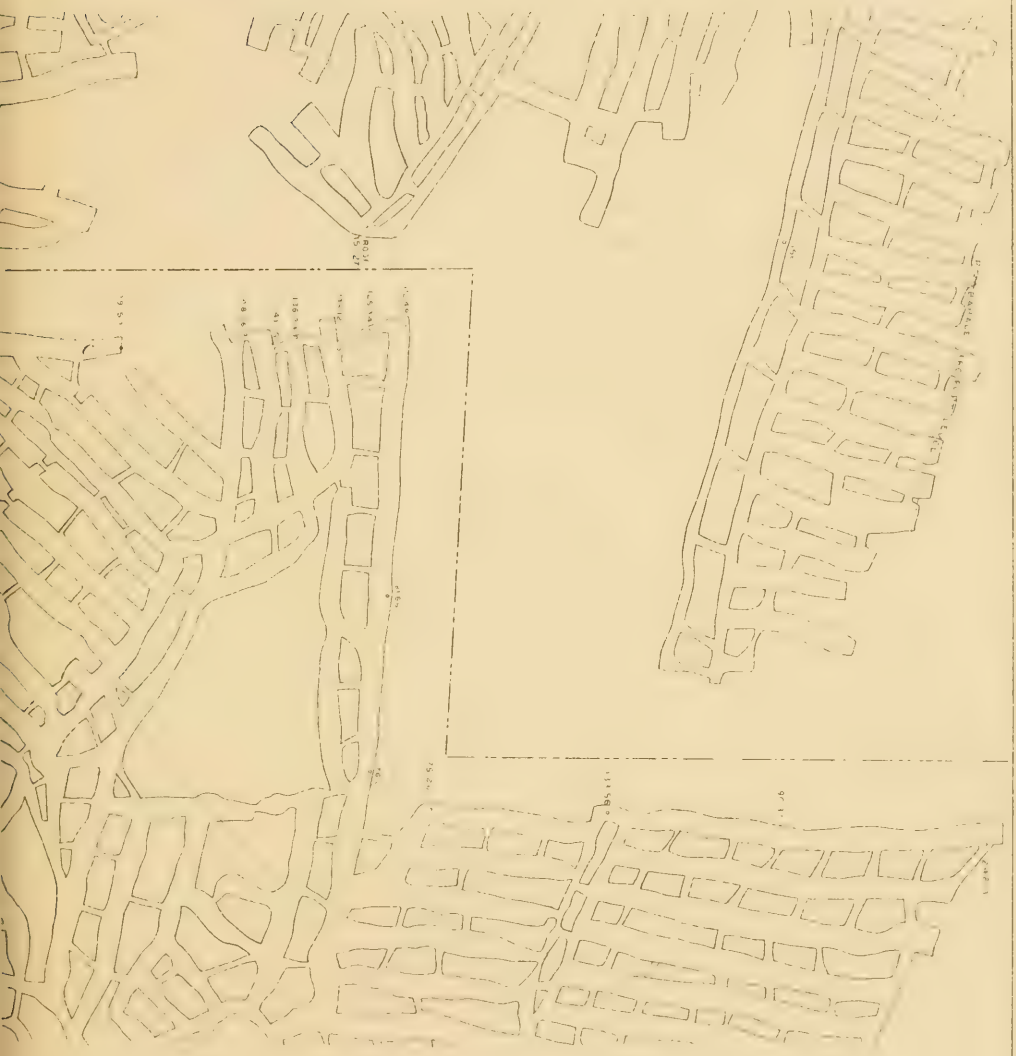
MAP SHOWING PILLAR BETWEEN CONYNGHAM AND HOLLENBACK

JAN. 1ST 1892

NOTE

Pillar determined by Surveys of Del and Hudson for the Conynghaam and the Lehigh & Wilkesbarre for Hollenback for G.M.Williams report

W.J Richards, M.E.



1843, the completion of the Lehigh and Susquehanna railroad from Wilkesbarre to White Haven opened a new avenue for taking the Wyoming Valley coal to market. The application of steam for propelling boats and the use of anthracite coal in the manufacture of iron, caused a rapid increase in the demand for anthracite. From this time on, the history of the coal trade of this region is familiar, and the great increase of production is seen at a glance in the published tables for each year.

The stereotyped tables of production in the commencement should be revised in justice to the history of this region, which was on record as a producer of coal several years earlier than these tables represent.

RECORD OF IMPROVEMENTS DURING 1891.

Important improvements were made at a number of the collieries during 1891 which are described in detail in the following:

Improvements by the Lehigh and Wilkesbarre Coal Company.

As stated in my report for 1890, the collieries of this company had been allowed to deteriorate, making it necessary that important improvements should be instituted in order to restore their former good condition and to maintain their capacity for producing coal. The management was again entirely changed, and the necessary steps to effect improvements were at once taken, and it gives pleasure to state that the collieries have been brought into good condition.

At the Hollenback colliery the new air shaft $12' \times 37'$ area and $856'$ deep was completed and this was connected to the main shaft by outlets driven a distance of 1,050.′ This had to be driven part of distance in rock. A tunnel having an area of $12' \times 7'$ was driven from the level gangway to the top split of Red Ash and to the Ross seams, a distance of 603′.

The main shaft having been sunk from the Baltimore to the Red Ash was largely retimbered and a new traveling way was made. The turnouts at the foot were also completed.

New drums $9\frac{1}{2}' \times 13\frac{1}{2}'$ were placed at the hoisting engines in lieu of the old ones which were too small to carry the additional length of rope; and a new fan $35' \times 12'$, having an engine $18' \times 48'$, is in progress of construction at the new air-shaft to ventilate the newly opened seams. The breaker was also remodeled and equipped with new elevators, rollers and conveyors.

A hole 8″ diameter and 458′ was bored for the purpose of filling the passages along the eastern boundary pillar with culm. It became necessary to do this because the adjacent mine was being filled with water to extinguish a fire, and the pillar had shown unmistakable signs of weakness under the pressure, and the culm was put in to add strength to it.

At the Empire colliery several short tunnels were driven from the top split of Red Ash to Ross seam and through a fault on the west side.

A new pair of hoisting engines 20″×36″ were put up at the No. 2 shaft to hoist from the underground slope.

At the South Wilkesbarre shafts, the damage that was done by the fire of 1890 was repaired, and a much more reliable system of ventilation was effected by driving new passages. A new fan 35′×12′, having an engine 20″×48″, is also in course of construction. The experiment of trying to ventilate this gaseous mine by a twelve-foot Cappell fan has not proven satisfactory, and the new fan is expected to effect a much desired improvement.

At the Stanton colliery the damaging effects of the cave of 1890 were repaired, and so was the effects of the South Wilkesbarre fire on the rock plane connecting the two collieries. This plane is now in working shape and openings are being driven to connect with the air-shaft, which when effected, will place the Hillman vein workings of this mine in good condition for work.

A tunnel was driven across the basin in the Baltimore seam, near the bottom of the underground slope, a distance of 456′, which has enabled them to ventilate a very gaseous portion of workings which has been idle for more than four years, owing to the prevalence of an unusual quantity of explosive gas.

A new air-shaft was also sunk for the Red Ash seam a depth of 318′ upon which a ventilating fan 24′ diameter, an engine 20″×36″, and two batteries of Babcock & Wilcox boilers were erected.

At the Jersey No. 8 colliery a new air shaft was sunk, having an area of 12′×12′ and a depth of 57′, upon which a new fan 24′ diameter, having direct acting engine 30″×36,″ were erected. Several other minor improvements were also made at this colliery.

At the No. 9 colliery, Sugar Notch, the underground slope was re graded and a new lift opened. The hoisting engines were taken out and new ones erected on the surface to do the work. These engines are 24″×48″ direct-acting on a parallel drum 9′ diameter. This has made a very agreeable change in the ventilation. Three tunnels were driven at different levels to work the Twin, Shaft and Top split seams.

At the Lance No. 11 colliery a new tunnel was driven from the Bennett to the Cooper seam, a distance of 222′. They have also improved the ventilation by enlarging the airways at contracted points through the mine. They also put in a system of water pipes in the gaseous gangways to be ready for extinguishing fires in case the gas-feeders should be ignited. A 100-horse power Dimmick & Smith high-pressure boiler was added to the plant on the surface.

At the Nottingham colliery the third and fourth east gangways closed by the cave of last year were reopened, and the standing gas removed by driving airways around the cave.

The Red Ash slope was extended, and a new lift was opened. A line of water pipes was laid into the lower gangways ready in case of fires from ignition of gas. The weak and affected pillars were strengthened by having the exhausted breasts filled up with refuse. A new underground slope was sunk on the Ross seam a distance of 660′ and the rope for hoisting, passes down a hole 206′ deep from surface. The hoisting engines on surface are 22″×48″ direct-acting to a parallel drum 9′×14′.

Two batteries of Babcock & Wilcox high pressure boilers, 212 horse power, were added to the surface plant and three elevators and three setts of conveyors were added to the breaker.

At the Reynolds No. 16 colliery the new breaker in course of erection in 1890 was completed and the old one was removed. The new breaker was started to prepare coal for the market in April, and so was the new slope described in my last report. An underground slope was sunk in the Ross seam with hoisting engines located on the surface, size of cylinders 14″×24″. The bore-hole through which the rope passes is 125′ deep. A tunnel 300′ feet long was driven through rock fault in the third west gangway, and a new plane was made in the Red Ash seam.

At the No. 18 colliery, Wanamie, a tunnel was driven from the Baltimore to the Ross seam a distance of 630 feet, and at the No. 19 colliery a tunnel was driven from the Ross to work the overlying seams. The main slope is also being extended to work another lift in the Ross seam. The breaker was remodeled, and one sett of elevators and two large conveyors were added to its machinery.

Improvements by the Delaware and Hudson Canal Company.

At the No. 2 shaft, Plymouth, an underground slope is in progress of sinking in the Bennett seam. This will enable them to mine the coal lying to the dip from the shaft level. A second opening was made for the Bennett seam by driving to connect with the workings of the No. 5 shaft, making a very convenient place of exit in case the shaft became unavailable. At the No. 3 shaft, Plymouth, a plane 1,000′ long, on a grade of 9°, was made in the Five Foot seam.

Improvements by the Susquehanna Coal Company.

At the No. 1 shaft the second opening for the underground shaft was completed by driving to connect with the slope level workings. Second opening for the tunnel to the Ross was also effected by driving a rock plane from the Red Ash level gangway. This will be useful also to work a large area of the Ross seam to the rise from that point.

A sixteen-foot Guibal fan is in course of construction to ventilate the workings of the George seam.

An underground slope is being sunk in the Forge seam east of the shaft. The hoisting engines for which are located on surface near the No. 2 shaft and the rope passes into the mine through a bore hole drilled for that purpose.

At the No. 6 shaft, Glen Lyon, another opening was effected by driving to connect with the No. 6 tunnel, and a part of this is utilized as a gravity plane, which has a grade of 30°. This was driven through disturbed faulty strata from the Ross seam and connects to the side of No. 6 tunnel.

Improvements by the Delaware, Lackawanna and Western Railroad Company.

At the Avondale colliery the new underground slope on the Red Ash seam is being sunk. It extended below the lower level gangway a distance of 750′ on an average grade of 12°.

At the Woodward colliery a new slope was sunk on the Red Ash seam, from the east level gangway, a distance of 700′ on a grade of about 5°. A tunnel was driven from the same seam, west of the shaft, to the Ross seam a distance of 500′ and having an area of 7′×14′. Important improvements were also made in the ventilation of this colliery by erecting new air bridges of substantial brick work. This colliery is opened in excellent shape, and the officials spare no pains in having everything arranged in the best order.

Improvements by the Lehigh Valley Coal Company.

At the Franklin colliery a new air shaft, 8′×10′, was sunk near the outcrop of the Abbott seam and connecting with the workings of that seam. This effected a very desirable improvement in the ventilation of the thin upper seams of this mine.

Improvements by the Alden Coal Company.

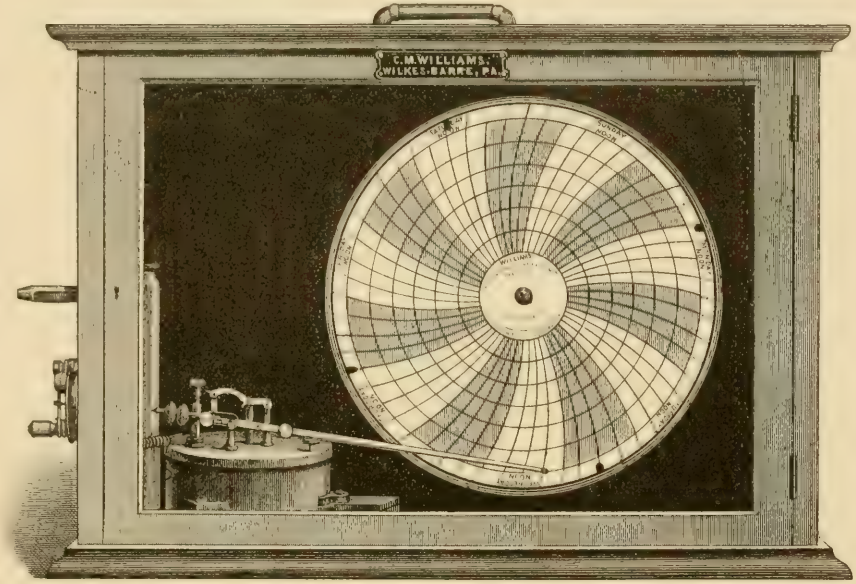
The main shaft of this company was extended from the Twin to the Red Ash seam and has now a total depth of 586′. An underground slope has also been sunk in the Red Ash seam to a length of 1,741′ on a grade of 14°, the average dip of the seam. This work is chiefly in the Ross and Red Ash seams.

Improvements by the Plymouth Coal Company.

At the Dodson colliery a new slope was sunk through the rock across the strata from the Bennett to the Ross seam. Its area is 7′×15′ and its length 382′ on a grade of 21°. A second opening is now being driven and will be completed in a few weeks. The hoisting engine is located underground near the head of the slope and the engines are worked by compressed air taken down from compressors on surface.

Improvements by the Parrish Coal Company.

The Baltimore seam slope of this company was extended a distance of 700′ and opened a productive extent of excellent coal. They leased also the old Buttonwood shaft property and are at work enlarging the old shaft and making preparations to reopen the mine on a large scale.



Williams' Self Recording Pressure Meter, and

Pressure Alarm for Mine Ventilators.

Improvements by the Hanover Coal Company.

A new underground slope was sunk a distance of 960′, extending from the west shaft gangway to work the coal lying to the dip from the shaft in the Red Ash seam. A new fan was also erected to improve the ventilation. This is 16′ diameter and exhausts 65,000 cubic feet of air per minute when running 50 revolutions.

Improvements by the West End Coal Company.

A new underground slope was sunk in the Conyngham drift a distance of 600′, and a new gravity plane was made on surface near the old drift to lower the coal from an opening made to work the coal near the north outcrop.

Improvements by the Newport Coal Company.

The No. 1 slope was extended to the basin, which point was reached at a distance of 550′; all on the Ross seam. A new drift was opened also on the Red Ash seam. It was in a distance of 1,524′ at the end of the year.

Improvements by the Hillman Vein Coal Company.

Two rock tunnels were driven by this company from the Hillman to the Kidney seam at different levels. Their lengths are 112′ and 170′ and the size of each is 7′×12′.

Improvements by A. J. Davis & Co.

At the Warrior Run colliery both underground slopes were extended. The Red Ash, which is the main slope, was extended a distance of 600′ below the lowest working lift, and the Front slope was extended a distance of 300′, and the sinking is continued in both.

RECORDING INSTRUMENTS ON VENTILATORS.

All the mines of this district are ventilated by exhaust fans. Section seventeen, article ten, of the mine law requires that "All ventilators used at mines shall be provided with recording instruments by which the speed of the ventilators or the ventilating pressure shall be registered for each hour, and such data shall be preserved at the colliery for future reference for a period of three months." Nearly all the fans of this district have been provided with instruments as required. There are three types of instruments in use, viz: The Bartle speed recorder, Sharar's speed and time recorder, and Williams' self-recording pressure meter and pressure alarm for mine ventilators. The latter is a new instrument and has a number of excelling points. The ventilation of a mine is produced by a difference of pressure produced in the fan or ventilator, and this difference of pressure varies with the speed of the ventilator. It varies also when affected by high winds and storms. This instrument makes a record of all these variations and also by closing an electric circuit

and ringing a bell or bells gives alarm when the pressure becomes lower than it is safe to have it. The bells are placed so that the engineer or officers can hear them. This instrument is preferred because it records the essential part of ventilation and gives alarm when this is dangerously affected. It needs no lubrication and very little attention, other than changing the chart once a week and winding the clock-work. A cut of the instrument as it appears without the electric battery and bell attached is herewith furnished. It is used on the fans of the following collieries in this district:

Dorrance Colliery, Lehigh Valley Coal Company, South Wilkes, Stanton, Lance No. 11. Two Nottingham fans, two fans at No. 9 Sugar Notch, two fans at No. 8 Ashley, and new thirty-five foot fan at South Wilkesbarre, all of the Lehigh and Wilkesbarre Coal Company.

Warren Run Colliery, A. J. Davis.

Hillman Vein Coal Company's Hillman Colliery, Dodson and Black Diamond Collieries of the Plymouth Coal Company.

Parrish Colliery, Parrish Coal Company.

Gaylord, and No. 4 Kingston, of the Kingston Coal Company.

Two fans of the Alden Colliery, Alden Coal Company.

East Boston Colliery, W. G. Payne & Co.

Twin shafts, Newton Coal Mining Companies and on the nine fans of the Susquehanna Coal Company at Nanticoke.

All of these have automatic alarms attached for the purpose of calling the engineer's attention in case the fan should run too slowly thereby causing the ventilation to become less than the minimum quantity desired.

TWO BREAKERS DESTROYED BY FIRE.

At about seven o'clock p. m., on the evening of May 5, 1891, while the engineer of the No. 4 shaft of the Kingston Coal Company was returning after a brief absence, he saw the engine-house on fire and instantly gave alarm. In a few minutes time it had spread to an uncontrollable extent over the whole breaker structure. The heat was so great that the No. 1 breaker also took fire, and both structures including the engine-houses and fans were entirely destroyed.

There were about fifty men in the mines at the time, but they escaped without trouble through the Nos. 2 and 3 shafts. These shafts were downcasts, and the burning breakers made upcasts of the Nos. 1 and 4, so that no smoke entered the workings.

Considerable quantities of gases accumulated, but the fan was soon repaired, and all the work people were removed in safety. It is gratifying to note that no one was injured during the progress of the fire, nor during the time it took to put the mine in a condition of safety.

THE RE-ERECTION OF THE BREAKER OVER THE NO. 4 SHAFT OF THE KINGSTON COAL COMPANY ENJOINED.

By a decision of the court of Luzerne county, the Kingston Coal Company was prevented from rebuilding the breaker over the No. 4 shaft for reasons explained in the following petition of the mine Inspector and in the opinion of the court:

In the Court of Common Pleas of Luzerne county, sitting in Equity between the Commonwealth of Pennsylvania upon the application of G. M. Williams, Inspector of Mines of the Fourth Anthracite Coal Inspection District of Pennsylvania, acting in behalf of the said Commonwealth, Plaintiff. and The Kingston Coal Company, Defendant. No. T., 1891.

To the Honorable, the Judges of the said Court:

Your orator complains and says:

First. That he is the mine Inspector of the fourth anthracite coal inspection district of Pennsylvania, embracing that portion of the Wyoming coal field west of Plains and Kingston townships, including the city of Wilkesbarre and the boroughs of Kingston and Edwardsville.

Second. That the above named defendant is a corporation duly organized under the laws of this commonwealth, and engaged in the mining and preparation of anthracite coal for market within the limits of the Fourth Anthracite coal inspection district aforesaid.

Third. That prior to the evening of May 5, 1891, the said defendant owned two breakers, two shaft towers and two engine houses, the first breaker, shaft tower and engine house, being used to prepare, store and hoist coal from said defendant's shaft No. 4, situate in the borough of Edwardsville, and in the district aforesaid, the said breaker was connected to the said tower, over said shaft, and said tower was connected with said engine house, the breaker was north and the engine house was south of said shaft, so that the breaker, shaft tower and engine house formed one structure. The second breaker, shaft tower and engine house being used to prepare, store and hoist coal from said defendant's shaft No. 1, situate also in the borough and district aforesaid; the said breaker was connected to the said tower, over said shaft, and said tower was connected with said engine house, the breaker was south and the engine house was north of said shaft, so that the breakers, shaft tower and engine house formed one structure.

Fourth. That on the evening of May 5, 1891, the breakers, shaft towers and engine houses, aforesaid, were entirely destroyed and consumed by fire, down to their foundations.

Fifth. That the said defendant is about to erect a new frame breaker, shaft tower and engine house to be used for the preparation, storage and hoisting of coal, upon the site of the old breaker, shaft tower and engine

house, at shaft No. 4 aforesaid, and the new breaker will be connected with the new shaft tower and new engine house in the same manner that the old breaker was connected with the old shaft tower and engine house.

Sixth. That said new breaker, if the defendant is permitted to erect the same, will be within two hundred feet of the mouth of shaft No. 4 aforesaid, which said shaft connects the surface with the underground workings of the mines of the defendant and up which shaft from the mines aforesaid, the defendant intends to hoist coal when the new breaker aforesaid is completed.

Seventh. That the erection of the said new breaker in the manner aforesaid is contrary to law, viz., to the fifth section of the act of assembly approved the second day of June, 1891, and entitled "An act to provide for the health and safety of persons employed in and about the anthracite coal mines of Pennsylvania and for the protection and preservation of property connected therewith," and the erection of said breaker will also work irreparable injury to your orator.

Your orator would therefore respectfully pray for relief as follows:

First. For an injunction, first preliminary and afterwards upon final hearing perpetual, against the said defendant, her agents, superintendents, servants, contractors and employes, restraining them or any of them from erecting a breaker, or other inflammable structure, for the preparation and storage of coal within two hundred feet of shaft No. 4 belonging to the said defendant and located in the borough of Edwardsville, Luzerne county.

Second. For such other and general relief as may seem proper to your Honors in the premises.

Luzerne County, ss:

G. M. Williams, the mine Inspector of the Fourth Anthracite coal district above named, being duly sworn, doth depose and say that the facts set forth and contained in the foregoing bill are just and true to his personal knowledge.

Sworn and subscribed before me)
this 17th day of June, 1891.)

. . . . . .

Written notice, as required by law, of the intention to apply for the injunction prayed for in foregoing bill is hereby waived.

. . . . . .

Attorney for Defendant.

COMMONWEALTH *ex rel.* WILLIAMS *v.* THE KINGSTON COAL COMPANY.

Police power—Mine Regulation Act of 1891.

1. The provision of the anthracite mine regulation act of 1891, forbidding the erection of a breaker nearer than two hundred feet to the opening of any mine, is not an unreasonable exercise of the police power of the state.
2. Said provision applies to the case of the rebuilding of a breaker totally destroyed by fire, after the introduction of the bill and before it became a law.
3. The opinion of witnesses, although uncontradicted, that no danger to the men will result from building a breaker over the mouth of a shaft, will not justify the court in refusing an injunction.
4. Police power considered.

Motion for injunction.

The opinion of the court was delivered July 10, 1891, by

RICE, P. J.—This bill was filed by the mine Inspector, and the prayer is for an injunction restraining the defendant company from erecting a breaker within two hundred feet of shaft number four, belonging to said company, in violation of the provisions of section five, article four of the act of June 2, 1891, entitled "An act to provide for the health and safety of persons employed in and about the anthracite coal mines of Pennsylvania, and for the protection and preservation of property connected therewith." The case comes before us upon a motion for injunction. The question is an important one, and in order that the exact point decided, and the grounds of the decision may clearly appear, it will be necessary to state the facts at length.

Prior to the passage of the mine ventilation act of 1885, the defendant company became the owner or lessee of the coal under a large body of lands, and the owner of only a comparatively small part of the surface.

Shafts one and four are about two hundred feet apart and were sunk upon the land of which the defendant is the owner; and the mines of the company have been opened and developed with a view of taking out the coal to be mined in front of and to the northeast, east and southwest through said shafts, and of preparing the same for market at the breakers erected in connection therewith.

In each case the breaker, engine house and tower were so connected as to constitute one structure which was over the shaft. Breaker number one was built in 1864–5, and breaker number four was in course of erection prior to the mine ventilation act of 1885, since which time, until the destruction of the breakers, the shafts and breakers have been used continuously for the purposes of their construction. In addition to these shafts there are three other modes of egress from the mines of the company, two by shaft and one by slope.

On the evening of May 5, 1891, a fire originated in the tower of breaker number four which was communicated to breaker number one, and both

were totally destroyed. The men at work in the mines at the time were notified, and came out through the other openings without difficulty, and without encountering any bad air. As we understand the affidavits the in-take of air was ordinarily down shafts one and four, and if this had not been changed any one can readily see the danger from a burning breaker immediately over the mouth of the shaft, or so near to it that the smoke, flames and burning timbers would be carried down the shaft. But on this occasion, shortly after the alarm was given, the ventilating fan at number three was stopped by order of the inside foreman, and this, together with the fire at the mouth of the shafts, caused a reversal of the air current and thus prevented the disastrous consequences to the men and animals in the mines, which otherwise might reasonably have been feared. Witnesses who were at the foot of the shafts while the breakers were burning, swear that the ventilation was good—in the language of one—"the shaft having acted as a chimney to cause an upcast and thus became itself a ventilator of the mine." The defendant's witnesses express a very decided opinion, that, taking into consideration the way in which the defendant's mines are developed and connected, the ways of egress, and the facts shown by the fire on May 5, no danger can result to the men or animals employed in the mines from the egress through shafts one and four being shut off by fire or otherwise.

Another fact asserted positively in the defendant's affidavits, and not controverted by any counter affidavits is, that owing to steepness of grade in one direction and the lines of adjoining land owners in other directions, the proposed breaker cannot be built on the land of the company in any direction two hundred feet from shafts one and four.

The act of March 3, 1870, P. L. 1, did not forbid the erection of a breaker over the mouth of a shaft, but provided that in such a case a furnace should not be used in the mines for the purpose of producing a hot upcast of air. The act of June 30, 1885, P. L. 218, forbade the use of a furnace for the purpose of ventilating any mine wherein explosive gases are generated, and further provided, as follows: "From and after the passage of this act no inflammable structure, other than a frame to sustain pulleys or sheaves, shall be erected over the entrance of any opening connecting the surface with the underground workings of any mine, and no 'breaker,' or other inflammable structure for the preparation or storage of coal shall be erected nearer than two hundred feet to any such opening, but this shall not be construed to prohibit the erection of a fan drift for the purpose of ventilation, or of a trestle for the transportation of cars from any slope to such breaker or structure, neither shall it apply to any shaft or slope *until the same has been driven to its proposed limit*, or until the work of development and shipment of coal has commenced. Provided, that this section shall not apply to breakers that are now erected, *or that are in course of erection*." The provision

of the act of June 2, 1891, is the same, except that the words italicized are omitted.

Notwithstanding this provision of the law, the defendant company proposes to build a breaker at shaft number four in substantially the same position as the former one, which, as we have seen, was practically over the mouth of the shaft. The question we are called upon to decide is whether, upon the facts stated, this will be lawful. It has been well said that the police power of a state is a proper subject for description rather than definition, and I shall not undertake what abler men have confessed their inability to do. But after a careful and thorough examination of the question we have no doubt that the regulation under consideration is one which was fairly within the power of the legislature to make. It is quite as unobjectionable on constitutional grounds as a law permitting municipal corporations to establish fire limits and to prohibit the erection of frame buildings within the same, or as the law requiring the owners of hotels, manufactories, etc., to provide fire escapes, or as those provisions of the first mine ventilation law which were sustained as within the constitutional powers of the legislature. Speaking of the act of 1870, Judge Harding said: "Of its constitutionality we have not the slightest doubt. It stands upon the statute books, known of all men, as the offspring of 'Avondale.' Of its propriety and necessity the law making power was taught not a moment too early." Com. *v.* Bonnell, 8 Phila. 534. Judge Dana said: "It is entitled 'An act providing for the health and safety of persons employed in coal mines.' Its provisions, prohibitions and penalties are directed to this end. The melancholy record of mining casualties in this and other coal fields called for legislative protection. The application and enforcement of the law in a case where, from the circumstances beyond the operator's control, compliance with its provisions is rendered impossible, may work hardship. But when the question is brought to the practical issue, is capital or human life to be sacrificed, can the answer be doubtful?" Com. *v.* Tompkins, 1 Luz. Leg. Reg. 341. Speaking of the same act, Mr. Justice Clark said: "This act of assembly was passed after the sad and memorable disaster which occurred at the Avondale mine on the sixth day of September, 1869. That mine had but a single shaft, the hoisting shaft: the brattice enclosing the air passage caught fire from some cause unknown, and very soon the only entrance to, or means of exit from, the mine was filled with burning timbers, fire and smoke. The breaker and buildings covering the shaft were entirely consumed, and one hundred and eight unfortunate miners instantly perished. This great public calamity and the investigation which followed, revealed the fact that the business of mining was negligently conducted, and that the lives of miners were constantly imperiled. Public sentiment demanded that this should be the subject of legislative provision, and this statute embodies the action of the legislature thereon." Haddock *v.* Com., 103

Pa. 243. Between the years 1870 and 1890, the annual production of anthracite coal was more than doubled. As the business has grown the dangers have increased, but so also have the knowledge and ability to cope with them grown. Nevertheless, the official reports of the mine Inspectors show that in the year 1890, there were one thousand and sixty-six persons injured in the anthracite coal mines of the state, and two hundred and seventy-five killed. It cannot be said, nor is it contended here, that a business in which so large a portion of the public is employed and is fraught with so much danger, is beyond the power of the legislature to regulate. "Generally it is for the legislature to determine what laws and regulations are needed to protect the public health and secure the public comfort and safety, and when its measures are calculated, intended, convenient and appropriate to accomplish these ends, the exercise of its discretion is not subject to review by the courts. But they must have some relation to these ends." Jacobs Case, 98 N. Y. 98. The act of 1891 is in the same line as the acts of 1870 and 1885, and is the product of the knowledge gained by the experience and investigation of the twenty-one years that have elapsed since it became apparent to all that the subject was one which warranted and imperatively demanded the exercise of the police power of the state. The provision under consideration clearly relates to, and is manifestly calculated to secure the safety of the large body of men employed in the mines, and the legislature could have had no other purpose in passing it. Possibly men may differ as to the expediency of the measure, but no one can say that it is an unwarranted invasion of private rights, for an ulterior purpose, under the guise of a police regulation. The power of the legislature to make the law being clear, the question whether the court has discretionary power to set it aside or refuse to enforce it in a particular instance, because, in the opinion of witnesses, it is an unnecessary regulation in that case, is free from difficulty. If that power is usurped by the courts in one case the statute will cease to be a rule of action and become merely a legislative expression of opinion which a co-ordinate branch of the government may respect or not, as it thinks fit. In construing the provisions of the act of 1870 relating to the duties of mine foremen we had occasion to say: "By this we mean that he cannot say that the necessities of the particular mine, or of the particular occasion, do not require him to perform things required of him by the statute. This statute is supposed to express the legislative wisdom of the state; to express what was necessary and best to secure the ventilation of the mines and the security of the men who work under the ground; and we repeat that the mining boss must perform the duties imposed on him by statute, and has no right to set up his private judgment against that of the legislature and to say that it is not necessary for him to perform them, or that he has power to perform them in some other way. If he fails to perform them he is guilty of negligence

even though no accident occurs." Com. *v.* Reynolds, 1 Kulp, 218. What is true of regulations which the foreman and other subordinates are bound to observe, is equally true of regulations affecting the mine owner's conduct of the business. Neither the mine Inspector, nor the court, nor a jury, has discretionary power to relieve him from the duty to perform those things which the legislature has imperatively commanded, or to permit him to do what the legislature has forbidden, upon the mere ground that no harm is likely to result. The allegation that the mines of the defendant company will be as safe for the men employed therein if a frame breaker is erected over the shaft as they would be if it were erected two hundred feet distant, after all that can be said, rests on the opinion of men. Conceding to them the knowledge of experts, they are nevertheless men of fallible judgment. The fact alleged is one that cannot be demonstated; for whilst it is true that the men escaped on this occasion without harm, no one can say that on another occasion there might not be a difference of conditions which would disastrously change the result. In the case of Powell *v.* Com., 114 Pa. 265, which was a criminal prosecution for a violation of the act prohibiting the manufacture, sale, and keeping for sale, of oleomargarine, the defendant offered to prove by a chemist who saw it manufactured that the article sold by the defendant to the prosecuting witness was a wholesome and nutritious article of food, and in all respects as wholesome and healthful as butter produced from pure, unadulterated milk, or cream from the same. There the fact set up in defense was capable of being proved with much greater degree of certainty than the fact set up here to except this case from the general opinion of the law. But, although, the trial judge said: "No one doubts that it might be made as stated in the offer," the evidence was rejected as incompetent, the defendant was convicted and the judgment was affirmed by the supreme courts of the state and of the United States. Powell *v.* Com., 127 U. S. 678 (L. Ed. 253).

It is claimed further that the section does not apply to a case of this kind, and the opinion of Judge Hand, in the case of Com. *v.* Smith, 4 C. P. Rep. 1, is cited in support of this position. The point actually raised and decided in the case cited was that the act of 1885 did not prohibit the sinking of a shaft (to take the place of a slope by means of which the mine had been operated for twenty years), within two hundred feet of the breaker where the breaker was erected before the passage of the act. In the course of his discussion Judge Hand said that where a breaker erected before the passage of the act is within two hundred feet of the opening of the shaft the act did not prohibit its re-erection in case of destruction by fire. The learned judge evidently referred to a breaker actually upon the ground, or in course of erection at the time the act was passed. Even if this proposition be accepted it does not rule the present case. The language of the proviso is: "That this section shall not apply to breakers that are now erected." This language

is plain and free from ambiguity. "The first and cardinal rule for the construction of statutes is, that where the intent of the legislature is plainly expressed, it must prevail; that when the language of a statute is clear and unequivocal, without ambiguity or uncertainty we are to presume that it expresses the intent of the legislature, and no construction is necessary." Haddock *v.* Com., 193 Pa. 243. There was no breaker erected at shafts one and four when the act of 1891 was passed, and it is to such a breaker that the proviso refers, not to a breaker that may have been built and destroyed before the act went into effect. The condition of things was the same as if the shafts had been sunk with the intention of locating the breaker in the place proposed, but the breaker had not been erected. There would be as great hardship in such a case as in the case actually before us, and as much reason for supposing that the section did not apply. "All laws must be executed according to the sense and meaning which they imported at the time of their passage." Com. *v.* Erie & N. E. R. R. Co., 27 Pa. 339. In determining what was the intent of the proviso the same rule must be applied. It is true these breakers were destroyed after the introduction of the bill, and less than a month before it became a law, but the fact that they were not in existence at the time the act was approved is as conclusive against the right of the company to build another to take their place within two hundred feet of the shafts as if they had been destroyed years before.

That the state has power in a case of overruling necessity to destroy the property of individuals who are in no fault is well settled. "A strong instance of this description is where it becomes necessary to take, use or destroy the private property of individuals to prevent the spreading of a fire, the ravages of a pestilence, the advance of a hostile army, or any other great public calamity." Cooley's Const. Lim. 594. But we are not prepared to say that the legislature clearly intended to go to that extent in the enactment of this section. The fact that breakers in existence were excepted out of its operation, shows that they did not regard the necessity of separating the breaker from the shaft so extreme and overruling as to require the destruction of property. If, therefore, it should come to this, that to prohibit the defendant company from rebuilding its breaker in the manner and at the place proposed would deprive it of the use and enjoyment of its property, would prevent it from mining its coal and preparing the same for market, we think the court, on the facts now presented, ought to pause before interfering by injunction. But where one sets up necessity as an excuse for doing something which the law forbids, or omitting to do something which the law commands, or as a reason for presuming, that, notwithstanding the letter of the law, the legislature did not intend it to apply to such a case as his, the fact ought to be shown clearly. The fact that it will be less convenient or more expensive to comply with the law is not such necessity. The citizen owns his property absolutely, it is true; it cannot be

taken from him for any private use whatever, without his consent, nor can it be taken for any public use without compensation; still he owns and holds it "subject to those general regulations which are necessary to the common good and general welfare. Rights of property like all other social and conventional rights are subject to such reasonable limitations in their enjoyment as shall prevent them from being injurious, and to such reasonable restraints and regulations established by law as the legislature, under the governing and controlling power vested in them by the constitution, may think necessary and expedient." Com. *v.* Alger, 7 Cush. 84. If he suffers injury, it is either *damnum absque injuria*, or, in the theory of the law, he is compensated for it by sharing in the general benefits which the regulations are intended and calculated to secure. 1 Dill. Mun. Corp., § 141. The establishment of fire limits within the denser portions of cities and villages within which, buildings constructed of inflammable materials shall not be erected or repaired, often interferes with the enjoyment of private property, imposes an additional burden of expense upon the owner if he desires to build, and occasions him inconvenience, but such regulations have been sustained notwithstanding this result. Klinger *v.* Bichel, 117 Pa. 326; 1 Dill. Mun. Corp., §§ 143-405. We might multiply illustrations, but it is unnecessary. There are innumerable police regulations which the courts have sustained, notwithstanding they have disturbed the free enjoyment of private property, and have subjected the owners thereof to inconvenience, expense and loss. If these considerations should be allowed to stand in the way of the enforcement of the mine ventilation law, but few precedents would be needed to destroy it. Fortunately the first law upon the subject received a different construction at the outset, and notwithstanding it occasioned additional burden and expense, and notwithstanding some of its provisions may have been unwise, inadequate and unnecessary, yet we believe it safe to say that, on the whole, the mine owners themselves have been more than compensated by the benefits that have accrued from its enforcement. We come then to the question, is it imperatively necessary to the use and enjoyment of its property for the defendant company to erect an inflammable breaker upon the site of the old one, or, at all events, within two hundred feet of the mouth of shaft number four? We are not convinced by the affidavits before us that it is.

First. It is not alleged that the defendant company has not land enough in the vicinity of these shafts to place the breaker two hundred feet distant, but only that, owing to the steepness of the grade, tracks for empty and loaded cars cannot be constructed. Conceding that this is an insuperable obstacle to the location of the breaker on its own land which cannot be overcome by grading, or by the construction of inclined planes, or in any other way, it is not asserted that the company has made any effort, and has failed, to obtain sufficient land for the purpose

at a reasonable price. Such may be the fact, but we cannot find that it is distinctly alleged in the affidavits.

Second. But if the breaker must be located less than two hundred feet from the shaft, must it be so constructed as to be an inflammable structure, and must it be located immediately over the mouth of the shaft as the old one was? Neither of these facts is clearly and distinctly alleged and proved to our satisfaction. It is true breakers are usually built of wood, but we believe it to be a fact that at least one breaker, if not more, has been built of iron, but with what success we cannot say. At all events, confining our attention strictly to the proofs before us, the defendant's affidavits do not assert that the breaker must be built of wood. The words "other inflammable structure," indicate the purpose and intent of the legislature, and, fairly construed, the prohibition of the statute would seem not to include a breaker if it is not an inflammable structure. And if a breaker can be so built, the law is no more oppressive in its operation than a law or an ordinance which prohibits the erection of frame buildings within the prescribed fire limits of a city.

For these reasons we conclude from the facts now before us, that it will not be lawful for the defendant to build a frame breaker at shaft number four in the manner proposed.

An injunction to continue until further order is awarded, restraining the defendant company from working the mine or colliery described in the bill in connection with shaft number four and a frame breaker or other inflammable structure for the preparation and storage of coal (excepting a frame to sustain pulleys or sheaves), to be erected within two hundred feet of said shaft.

W. S. McLean, Hon. H. W. Palmer, for plaintiff.

Hon. H. B. Payne, for defendant.

FIRE IN THE NO. 4 SLOPE, NANTICOKE.

On Thursday afternoon of February 5, 1891, when a miner fired a blast at the face of the east gangway No. 7 lift in the Mills seam, the gas feeders were ignited. It was an exceedingly gaseous locality and the fire quickly spread to other places. There were water pipes, with water, hose and all the necessary implements for fighting a fire convenient, with plenty of brave and experienced men. But although strenuous efforts were made until the next day, the situation became too perilous from frequent explosions to continue the work, and it was decided to withdraw the men and flood that portion of the mine.

It was calculated that fifteen millions of gallons of water would be necessary to flood the No. 7 lift, and in order to prevent the fire from spreading into other lifts, it was necessary that the lower one should be sealed as quickly as possible. Consequently, after a few hours of quick preparation, the water was poured in at the rate of two millions of gallons per day and the fire was successfully confined to the lower lift. After this a

bore hole was made to permit the pent-up gases and air to escape so as to allow the water to flood the highest points in the workings. An enormous quantity of explosive gases escaped through this hole, and it kept that part of the mine in a very dangerous condition for several weeks.

On March 21 they commenced to hoist the water out, but in a short time met obstructions which showed that the fire-clay roof had generally fallen in, and this made the work of reopening tedious and expensive. In October a squeeze originated in the lifts above No. 7 which finally caved a portion of the workings of both Nos. 2 and 4 slopes. This complicated the situation in the No. 4 slope so that the work of reopening the lower lift had to be suspended until the airways were reopened through the caves; a work of several months' duration. At the close of the year this had not been completed, but the work was progressing favorably, and although the danger was very great, by the unremitting care of the officials and workmen a condition of comparative safety was restored without an accident.

FIRE IN THE CONYNGHAM COLLIERY.

In December, 1890, the water gained in the pump in the Conyngham shaft and finally reached a height of about 125 feet vertical. By placing additional pumps in the Baltimore slope and using tanks on the cages to hoist water in the Conyngham shaft, in lieu of the pump which was disabled, they succeeded, after many mishaps, in lowering the water to a point about two feet below the roof of the gangway by the 9th day of July, 1891, when, to their surprise, an explosion occurred. The concussion of this explosion was felt by men who were at work in the shaft and also by men who were in the Baltimore slope. It occurred at 7.30 a. m., and for ten succeeding days explosions of more or less force took place at irregular intervals, once and sometimes twice in a day. The cause was a profound mystery, as it was not known nor suspected that a fire existed anywhere in the mine prior to this time. The workings had been filled with fire-damp during all the time the water had caused the ventilation to cease circulating, and yet nothing occurred indicating the existence of a fire.

During the time that the explosions of July occurred, the return air of the Baltimore slope was highly charged with carbonic acid and other noxious gases, and soon after this it became irrespirable and fatal to life.

The air currents were changed so that the poisonous gases were driven down towards the Conyngham fan, in order to make the workings safe for an exploration to ascertain the location of the fire, but the water had caused the roof to fall so that every passage leading to that locality was closed and inaccessible.

On September 15 the return air at the Baltimore slope fan was examined and found to contain 4 per cent. of carbonic acid in a current of about 60,000 cubic feet per minute, and the temperature was above 90°

Fah. This was a decided proof of the existence of a fire, and the direction from which this air came showed that the fire was somewhere west of the line of the Baltimore slope. The Conyngham and Baltimore slope workings are connected at a number of places, and the latter mine has been worked out and abandoned. A large extent of the abandoned workings west of the slope is caved and cannot be examined from above, or from the slope. The Conyngham workings are all below those of the slope on the same dip and are really a continuation of workings towards the dip in the same seam of coal.

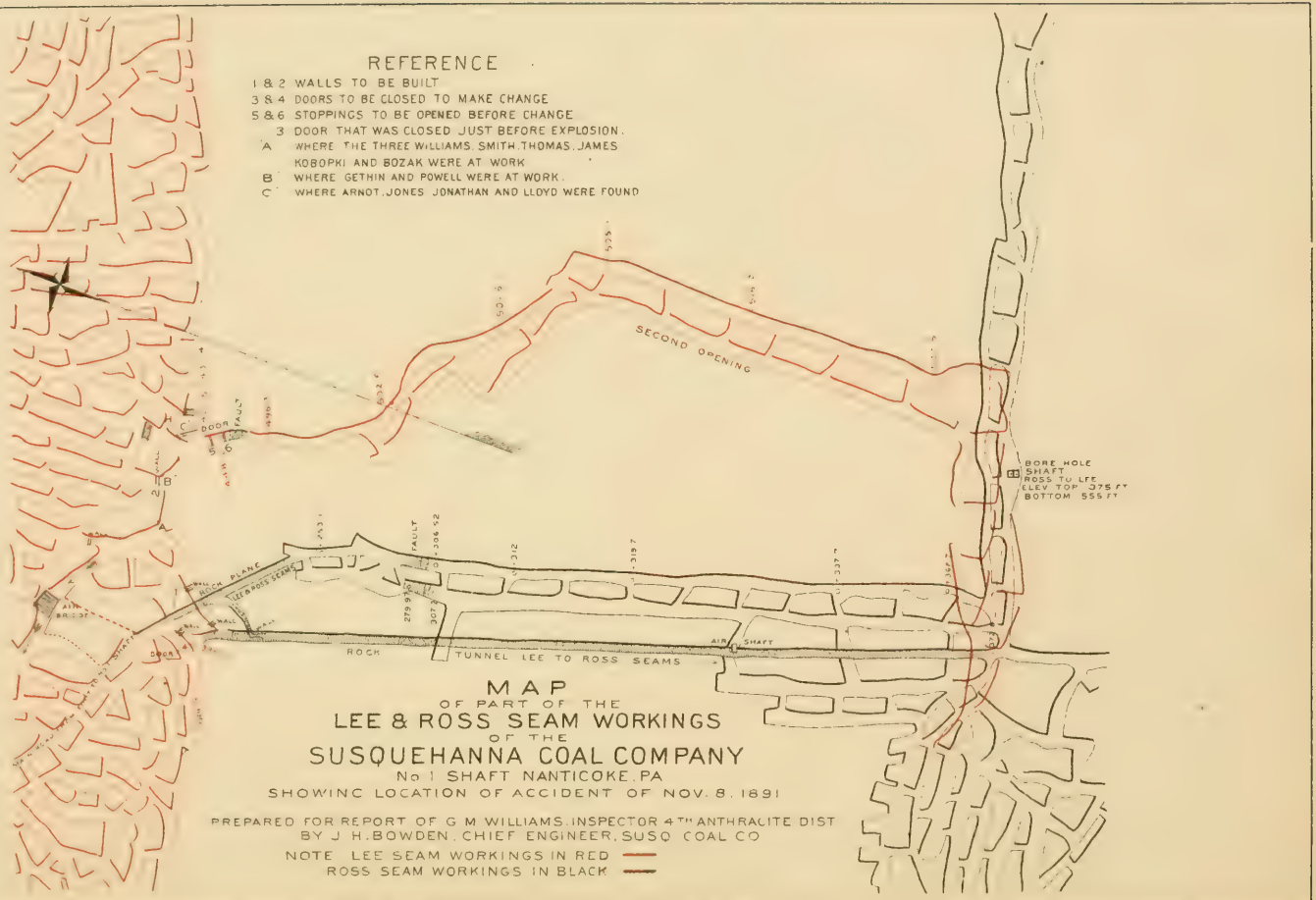
The company finding no means by which the fire could be located decided to flood the mine again, and fill it to a height that would beyond doubt cover the fire, a height of about 460 feet vertically.

The writer apprehending danger to the employes of the Hollenback mine if the pillar between the two mines should fail to sustain the pressure, informed the officials of that colliery and cautioned them to keep a careful watch on said pillar.

October 13 the writer, in company with Superintendent E. H. Lawall, Superintendent M. R. Morgans, W. J. Richards, mine engineer, and the mine foreman, Samuel R. Morgan, all officials of the Lehigh and Wilkesbarre Coal Company to whom this colliery belongs, and Mr. William T. Smyth, ex-superintendent, went in and examined the pillar carefully and saw nothing to indicate danger. We walked up the passage C C (see map showing pillar between Conyngham and Hollenback). At this time the Lehigh and Wilkesbarre Coal Company started to bore a hole from the surface to penetrate this passage at the location shown on map, and wash culm down to fill the passages C C and D D with the view of strengthening the pillar.

On November 7 before the hole was finished, the writer examined the pillar again in company with Messrs. Morgan, Richards and C. H. Scharar, mining engineer of the Delaware and Hudson Canal Company, and found the coal cracking as if the pillar was yielding under the pressure of water on the other side. The water was then at a height of 235 feet vertically. At the request of the Inspector the employes of the Hollenback colliery were withdrawn until such time as the two passages mentioned were filled with culm. The Delaware and Hudson Canal Company ceased pouring water into the Conyngham also, until the said passages were filled. The coal continued to squeeze and crack for a distance of about 200 feet between the points A and B and a considerable quantity of water was issuing from the coal at several points.

If the pillar is as wide as the surveys represents it to be, it is strange that a weakness was shown at A to B where the width of pillar is greater than it is from there down. The bore-hole verified the accuracy of the surveys on the Hollenback side, but the cracking and squeezing of the pillar at the points stated, caused more or less mistrust as to the thickness of the pillar shown in the survey on the Conyngham side. The


REFERENCE
1 & 2 WALLS TO BE BUILT
3 & 4 DOORS TO BE CLOSED TO MAKE CHANGE
5 & 6 STOPPINGS TO BE OPENED BEFORE CHANGE
3 DOOR THAT WAS CLOSED JUST BEFORE EXPLOSION.
A WHERE THE THREE WILLIAMS, SMITH, THOMAS, JAMES KOBOPKI AND BOZAK WERE AT WORK
B WHERE GETHIN AND POWELL WERE AT WORK.
C WHERE ARNOT, JONES, JONATHAN AND LLOYD WERE FOUND
SECOND OPENING
DOOR
FAULT
BORE HOLE
SHAFT
ROSS TO LEE
ELEV TOP 375 FT
BOTTOM 555 FT
LEE & ROSS SEAMS
ROCK TUNNEL LEE TO ROSS SEAMS
AIR SHAFT
MAP
OF PART OF THE
LEE & ROSS SEAM WORKINGS
OF THE
SUSQUEHANNA COAL COMPANY
No 1 SHAFT NANTICOKE, PA
SHOWING LOCATION OF ACCIDENT OF NOV. 8, 1891
PREPARED FOR REPORT OF G M WILLIAMS, INSPECTOR 4TH ANTHRACITE DIST
BY J H. BOWDEN, CHIEF ENGINEER, SUSQ COAL CO
NOTE LEE SEAM WORKINGS IN RED
ROSS SEAM WORKINGS IN BLACK

breasts may have been driven farther than the map shows, or the coal may have run since the breasts were driven, and this would cause the pillar to be less than the width represented at the points where the cracking of the pillar occurred. It was the intention of the Delaware and Hudson Canal Company to have the workings re-surveyed, in order to test their accuracy, but they were prevented by the accumulation of water.

At the close of the year the Lehigh and Wilkesbarre Coal Company was preparing to apply for an injunction to prohibit the Delaware and Hudson Canal Company from filling the Conyngham mine with water, lest it might burst the pillar and damage their property. Additional account of this trouble will be given in the report for 1892.

A DISASTROUS EXPLOSION OF GAS AT NO 1 SHAFT, NANTICOKE.

Shaft No. 1 at Nanticoke, is the property of the Susquehanna Coal Company. It is a double shaft having four hoisting cages, two of which are used to hoist the coal from the Forge or Hillman seam, and the other two to hoist the coal from the Lee or Red Ash seam, three hundred feet deeper than the former. The Red Ash seam is known at Nanticoke as the Lee vein, and the Hillman as the Forge vein. The Ross seam lying between these two, is not worked directly from the shaft, but is worked from a horizontal tunnel driven through the overlying rocks from the Lee seam at a point 1,440 feet south of the main shaft. In order to enable the reader to understand the circumstances of this accident, a map embracing the scene of the disaster is herewith furnished. The workings in red are those of the Lee seam and the workings in black are those of the Ross seam, which are connected to the Lee workings by a rock plane and a horizontal rock tunnel, and also by an underground shaft, designated on the map as the Bore Hole shaft. Thus there were three openings connecting the workings of the two seams. The Bore Hole shaft extends from the Ross east gangway to the Lee seam, a depth of 180 feet. It has two hoisting cages; the engines are located on the surface and the ropes pass down through bore-holes to the Ross seam over the shaft. A second opening for this shaft was recently completed, leading down the bottom of shaft and connecting to old workings near the door 3, the vicinity of the disaster, all in the Lee seam. Near the upper end, this second opening enters in the upper member of a lap-fault, while for a distance of about 50 feet a passage was driven down to meet it from 5 to 6 in the lower member of the fault and enters beneath the upper one at a vertical distance of about 12 feet. Connection was made at this point by a short rising passage through the rock (see fault). The passage from above (5 to 6) dipped at a pitch of about 30 degrees towards the fault, and the passage from the shaft up, was rising all the way and had an increased pitch as it approached the fault, terminating at the fault in a rising pitch of about 40

degrees. At the upper point of this passage where the rock-hole driven up through fault connected, a small quantity of gas was standing, which the air current in making a short turn from the rock hole failed to reach.

Preparations were being made to make this second opening the permanent return airway for the borehole shaft workings. Several wall stoppings had to be built in order to effect the desired changes in the courses of the air currents, which could not be effected with safety during working hours. Hence it was decided to have this work done between Saturday night and Monday morning, when the mine would be idle. By Sunday afternoon, November 8, all the wall stoppings were completed, except the one at B, which was not yet plastered. The two masons, Caleb Gething and Thomas R. Powell, were working at this wall when the accident occurred. Prior to this time an air current came in through the passage C and passed through B, but an opening was made at A leading directly to the return airway passing over the air bridge, hence B was closed as soon as A was sufficiently opened.

At about five o'clock p. m., William J. Williams, Sr., William J. Williams, Jr., Thomas R. Thomas, Edward D. Williams and Daniel R. James, were all at work cleaning a gob at A, which partially filled the passage. They were at the upper side and David T. Smith, Joseph Robofski and Thomas Bozak were throwing the gob back on the lower end towards B. The two masons, Gething and Powell, were plastering the wall B. Thomas Lloyd and the three fire-bosses, Henry R. Jones, William Jonathan and John Arnott, had gone back from the others towards C shortly before the accident. All had safety-lamps and no one used naked light. There was a strong current of pure air coming in directly from the main shaft and passing the men at A, over the gob which they were removing towards the air-bridge. Suddenly and unexpectedly the men at A noticed their lamps filling with gas, and instantly called one another's attention to it. All reached for their lamps and instantly they were surrounded by a burning flame which filled the whole passage.

One man, a Polander, who was unloading a car of rock some distance away escaped uninjured, but all the others that have been named, were either killed or severely injured. The three fire-bosses and Lloyd were found near the door at C. Arnott, Jonathan and Lloyd were evidently killed instantly. Jones lived about one hour, but was unconscious all the time. The others except Daniel R. James and Edward D. Williams died within forty-eight hours. The two named, after a period of intense suffering, finally recovered.

It is not known with certainty where the gas came from nor how or from whose lamp it was ignited, but it is reasonably evident that it ignited from one of the safety-lamps. The current of gas was swift, and a sharp movement of a lamp against it would cause the flame to pass through the meshes of the gauze. Smith and his two companions on the lower side of the gob at A would have to go against the current, and

if they made a move towards escaping, it was certainly made in that direction. Any of the others also might have moved a lamp quickly against the current, either of which under the existing conditions would most certainly have ignited the gas by the flame passing through the apertures of the gauze.

The gas may have accumulated at either the old breast marked on sketch "roof fallen" or at the lap or fault in the second opening. The old breast mentioned is only twenty-five feet long between the wall stopping shown, and its intersection with the passage A, B. The roof had fallen to quite a height, leaving a large cavity. The cross cut H, though hidden by a gob along the rib of the passage C, was open. The opening of the breast was also partially closed by gob along that side of the passage B. Owing to the existence of the gob a stranger would not be likely to notice the cross cut "H," nor the breast, but the fire-bosses knew of its existence and had been in it frequently prior to this time, making examinations. Yet the circumstances seem to show that they had overlooked it at this time. The cross cut "H" would have to be closed before the desired change in the course of the air could be fully effected, but it was not closed, nor was there anything showing an intention of doing so. The door at C was erected several days before, and was fastened open to prevent it being closed until everything was ready for the change. They had about six hours work to finish clearing the gob at A. Now the question is, did the fire-bosses take off the temporary stoppings 5 and 6 and close the door at C? If they did, and if there was gas in the old breast on top of the fall, the air current would pass through the cross cut "H" and move the gas upon the men at A; or, if there was a body of gas in the "lap fault," the air would also pass up the second opening and sweep that gas directly upon the men. Under these circumstances the gas may have come from either or both places. It is not known that the door was closed or that the stoppings 5 and 6 were taken off, but it is supposed that they were. The fire-bosses were all intelligent and were experienced in this kind of work, and in the absence of a motive we cannot conceive a reason for closing the door and effecting the change without taking the precaution of withdrawing the men from the path of the return air-current. This precaution is invariably taken when work of this kind is being done. Some contend that if the stoppings 5 and 6 were practically removed, the air current might have reverted in the second opening without closing the door, and unexpectedly to the fire-bosses. A careful study of the situation suggests the probability of it doing so under conditions that might have existed at that time, but subsequent experiment failed to verify this. It was indeed a deplorable accident occurring when it was thought that every chance for an accident had been foreseen and provided against. Nearly all the men were the best and most experienced for this class of work, and we cannot believe that it occurred through any recklessness on the part of any of them.

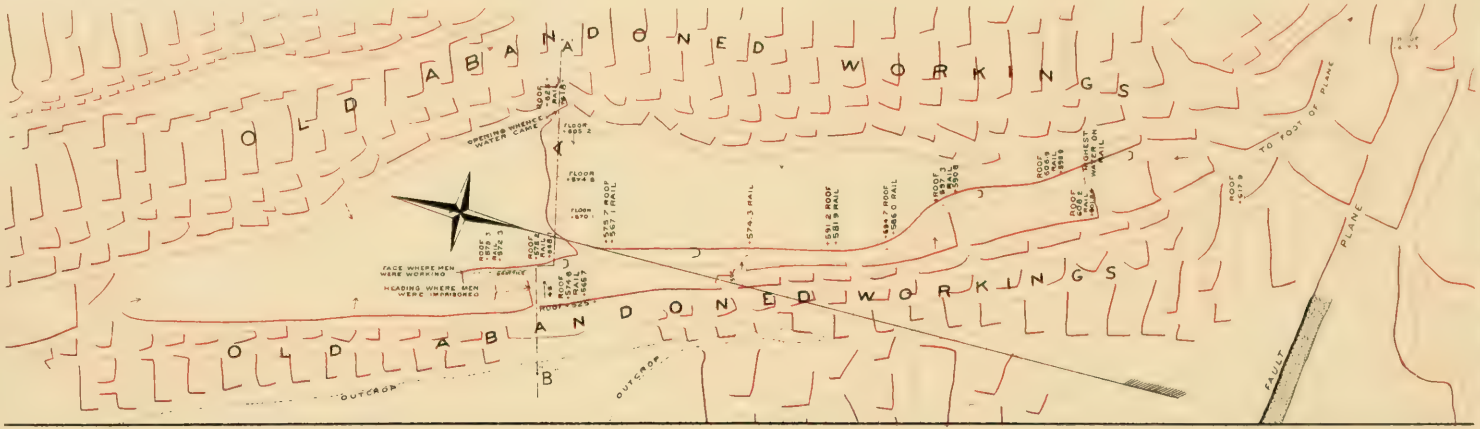
EXPLOSION AT THE STANTON COLLIERY.

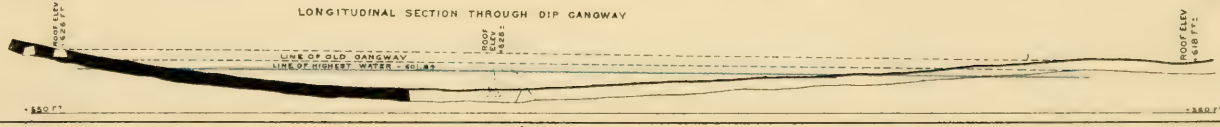
On the morning of December 31st, the last day of the year, 1891, while Moses Jones, Thomas Malia and John R. Davies were walking to their work on the gangway against the air-current, each carrying a safety lamp, and no other, unexpectedly entered fire-damp which exploded from their lamps injuring Malia and Davies fatally and Jones very severely. There were no others working in this part of the mine. The workings of this section had to be suspended about five years before, because the current of air became too highly charged with gas. Now a rock tunnel had been driven, to increase the ventilation and these men were working to repair the rotten brattice and timber. They had worked at this for several weeks and had nearly completed the work. They could have traveled through the rock tunnel with the pure air, which was a much shorter and safer route, but for some unexplained reason they took the longest way and went in against the return air. The breasts were rising at a steep angle, and the coal was thick and free, and evidently a fall in the face of one that had gas in, drove it into the current just at the time they were going in to meet it. Malia was walking at a distance of about four feet behind Jones and he saw Jones. lamp filling with gas and instantly both were surrounded by flame Davies had remained some distance back, but he also was severely burned. They were rescued in a short time, and everything was done that could be to alleviate their sufferings, but Jones was the only one who recovered after a long period of suffering.

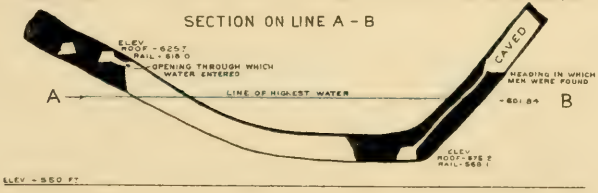
REMARKABLE RESCUE OF THREE MEN AT WEST NANTICOKE.

At about twelve o'clock midday, Wednesday, February 4, 1891, John Rineer, William Cragle and Michael Schelank were closed in by water in the workings of the No. 3 colliery, at West Nanticoke, and were rescued at five o'clock a. m., February 9, having been in there for one hundred and thirteen hours.

A sketch of the workings of that part of the mine is herewith furnished. The reader will notice that the unmined coal is that of a long narrow local basin. From each side of this basin above the level gangways which join around it, all the coal had been mined and the pillars were robbed. The roof had also fallen, making these old workings inaccessible, and the falls had blocked the water back on the gangway on the right so that there was quite a large body of it, but it was not known to be there. The three men named were driving the gangway along the synclinal of the basin (marked on map c c c c). Thomas Lewis and Daniel R. Davies were driving the passage A on the right to connect with the old level gangway for the purpose of ventilation. On Tuesday, the day prior to the breaking in of the water, they bored a drill hole through to the old gangway, and found considerable water running in. Work was then suspended for the remainder of that day







MAP
OF PART OF THE
LEE SEAM WORKINGS
OF THE
SUSQUEHANNA COAL COMPANY
No 3. TUNNEL WEST NANTICOKE, PA.
SHOWING LOCATION OF ACCIDENT OF 4 FEB'Y. 1891.

PREPARED FOR REPORT OF G.M. WILLIAMS, INSPECTOR 4TH ANTHRACITE DIST.
BY J.H. BOWDEN, CHIEF ENGINEER, SUSQ COAL CO

and the following night. Upon going in there the next day they found that the water had ceased running and came to the conclusion that it had all run out. They then fired a blast which opened a large hole and a rush of water came in. James Evans, a company man, was there with Lewis and Davies. The passage was over one hundred feet long from the gangway, and the volume of water was so great that the three men named had a severe struggle to escape. If the driver, John Rowe, had not been convenient on the gangway c, to show them light, they would certainly have become confused in the water and drowned, but fortunately he was there, and rendered all the assistance in his power, and they succeeded in getting out before the water became too deep. From the intersection of the passage A, the gangway was rising towards the face and also towards the other end. The three men who were closed in were at the face of the gangway. They heard the other men shouting, but the water had filled the gangway at the lowest point and cut off their escape before they were aware of its presence. They instantly sought the highest point by climbing up the cross-cut B on the left of the gangway. The old workings above them were all caved in and they had to wait in that small steep passage until they were rescued at the time stated. When they were found, they were in an exhausted condition, but with careful nursing they soon recovered.

TABLE I.—*Showing Location of Collieries in the Fourth Anthracite District, 1891.*

NAME OF COLLIERY.	Name of Operator.	Location Luzerne County.	Name of Superintendent.	Postoffice Address.
Hollenback	Lehigh and Wilkesbarre Coal Company	Wilkesbarre		
Empire	do. do.	do.		
Stanton	do. do.	do.	Elmer H. Lawall, general manager; Morgan R. Morgan, inside superintendent; W. J. Richards, mining engineer; W. H. Herring, outside superintendent.	Wilkesbarre, Pa.
South Wilkesbarre	do. do.	do.		
Jersey No. 8	do. do.	Ashley		
No. 9 shaft	do. do.	Sugar Notch		
Lance No. 11	do. do.	Plymouth		
Nottingham No. 15	do. do.	do.		
Reynolds No. 16	do. do.	do.		
Wanamie Nos. 18 and 19	do. do.	Wanamie		
Baltimore shaft No. 2	Delaware and Hudson Canal Company	Wilkesbarre		
Baltimore shaft No. 5	do. do.	do.		
Baltimore tunnel	do. do.	do.		
Conyngham	do. do.	do.		
Boston	do. do.	Plymouth township	A. H. Vandling, general manager; C. H. Scharar, mining engineer.	Providence, Scranton, Pa.
No. 2 Plymouth	do. do.	Plymouth		
No. 3 Plymouth	do. do.	do.		
No. 4 Plymouth	do. do.	do.		
No. 5 Plymouth	do. do.	do.		
No. 4 tunnel	Susquehanna Coal Company	Nanticoke		
No. 2 slope	do. do.			
No. 3 tunnel	do. do.	West Nanticoke	J. A. Stearns, general manager; Geo. T. Morgan, general superintendent; J. H. Bowden, chief mining engineer; A. Rees, general inside superintendent.	Wilkesbarre and Nanticoke.
No. 4 slope	do. do.	Nanticoke		
No. 6 slope	do. do.	Glen Lyon		
No. 1 shaft	do. do.	Nanticoke		
No. 2 shaft	do. do.	do.		
No. 6 shaft	do. do.	Glen Lyon		
No. 6 tunnel	do. do.	do.		
No. 1 shaft	Kingston Coal Company	Edwardsdale	Daniel Edwards	Kingston, Pa.
No. 2 shaft	do. do.	do.	do.	do.
No. 3 shaft	do. do.	do.	do.	do.
No. 4 shaft	do. do.	do.	do.	do.
Gaylord	do. do.	Plymouth	do.	do.
Avondale	Del., Lackawanna and Western Railroad Co.	Plymouth township	W. R. Storrs, general manager; W. H. Storrs, general outside superintendent; B. Hughes, general inside superintendent.	Scranton.
Woodwards Nos. 1 and 2	do. do. do.	do.		
Dorrance	Lehigh Valley Coal Company	Wilkesbarre	W. A. Lathrop	Wilkesbarre.
Franklin	do. do.	do.		
No. 1 Red Ash	Red Ash Coal Company	do.	M. B. Williams	do.
No. 2 Red Ash	do. do.	do.		
Alden	Alden Coal Company	Alden	K. M. Smith	Alden Station, Pa.
Dodson	Plymouth Coal Company	Plymouth	James B. Davies	Plymouth.
Parrish	Parrish Coal Company	do.	H. H. Ashley	do.
West End	West End Coal Company	Mocanaqua	John Teasdale	Shickshinny.
Lee	Newport Coal Company	Newport township	Charles Parrish	Wilkesbarre.
Maffet	Hanover Coal Company	Sugar Notch	Jacob Roberts, Jr.	do.
Warrior Run	A. J. Davis	Hanover township	A. J. Davis	do.
Hillman Vein	Hillman Vein Coal Company	Wilkesbarre	S. J. Tonkin	do.

TABLE II—*Gives the total number of tons of coal mined and shipped in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Fourth Anthracite Mining District, for the year ending December 31, 1891.*

NAMES OF COLLIERIES.	Location Luzerne county.	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.
Lehigh and Wilkesbarre Coal Company.											
1. Hollenback No. 2	Wilkes-Barre	48,937.15	38,331.90	55.25	230	2	2	1,720	39	24	. .
2. Empire No. 4	do.	317,168.55	314,160.55	202.45	819	3	8	9,336	30	37	2
3. South Wilkesbarre Nos. 3 and 5.*	do.	55,370.85	55,370.85	. . . . .	175	. . .	1	1,300	12	25	. .
4. Stanton No. 7	do.	31,804.90	21,840.40	. . . . .	376	2	5	279	45	35	1
5. Jersey No. 8	Ashley	134,912.95	128,600.20	185.55	425	. . .	2	3,680	30	32	1
6. Sugar Notch No. 9	Sugar Notch	183,446.65	181,358.15	192.20	607	6	4	7,284	25	56	1
7. Lance No. 11	Plymouth	283,512.05	282,497.55	203.70	708	2	5	9,309	19	86	. .
8. Nottingham No. 15	do.	637,807.10	632,373.60	225.95	1,297	5	7	13,667	35	147	3
9. Reynolds No. 16	do.	170,106.35	170,106.35	194.75	544	1	4	4,375	19	66	1
10. Wanamie Nos. 18 and 19	Wanamie	163,430.85	161,900.10	190.90	565	1	3	5,441	30	64	2
Totals		2,026,497.40	1,986,539.65	181.34	5,746	22	41	56,391	284	612	11
Delaware and Hudson Canal Company.											
11. Baltimore shaft No. 2	Wilkes Barre	84,007.50	84,007.50	173.00	220	1	1	3,497	12	19	. .
12. Baltimore shaft No. 3	do.	101,885.75	101,885.75	206.25	355	1	2	3,423	23	55	. .
13. Baltimore tunnel	do.	113,382.40	110,575.45	195.00	341	2	2	3,977	21	51	2
14. Conyngham	do.	32,609.45	17,114.05	98.75	159	2	1	468	20	13	. .
15. Boston	Plymouth township	174,412.75	166,412.75	183.25	284	. . .	2	3,873	12	43	. .
16. Shaft No. 2	Plymouth	116,233.55	116,233.55	155.75	303	. . .	. . .	2,447	24	36	. .
17. Shaft No. 3	do.	181,894.50	180,414.50	187.75	453	1	2	5,953	21	57	. .
18. Shaft No. 4	do.	148,512.45	148,512.45	189.00	402	. . .	3	5,230	15	55	. .
19. Shaft No. 5	do.	172,463.95	168,466.95	185.50	318	1	2	3,591	21	43	1
Totals		1,125,402.30	1,093,622.95	174.91	2,815	8	15	32,459	169	372	3

* No breaker

TABLE II—*Continued.*

NAMES OF COLLIERIES.	Location Luzerne county.	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.
Susquehanna Coal Company.											
20. No. 1 slope,	Breaker No. 1.	Nanticoke,	119,059		149.75						
21. Nos. 1 and 4 tunnel,						1	1				
22. No. 1 shaft George vein,						2	15				
23. No. 1 shaft Forge vein,	Breaker No. 2.	do.	505,920.95		264.65	1,613	13		90	195	7
24. No. 1 shaft Lee vein,							8				
25. No. 2 slope,						6	6				
26. No. 3 slope or Harvey,		West Nanticoke,	58,964.20	1,449,024.10	108.15	125	1	32,434	29	22	1
27. No. 2 shaft,	Breaker No. 5.	Nanticoke,	447,165.50		270.80	1,018	4	13	132	144	2
28. No. 4 slope,								3			
29. No. 6 slope,								3			
30. No. 6 shaft,	Breaker No. 6.	Glenlyon,	335,396.70		249.95	1,052	4	4	84	134	2
31. No. 6 tunnel,								1			
Totals,			1,466,446.35	1,449,024.10	208.66	3,808	30	55	32,434	335	495	12
Kingston Coal Company.											
32. Shaft No. 1,		Edwardsdale,	64,333.20	58,035.15	61.85	248	1	1	2,135	36	34	...
33. Shaft No. 2,	Breaker No. 2,	do.	350,392.95	342,012.20	246	608	1	...	10,172	39	60	3
34. Shaft No. 3,							3	2				
35. Shaft No. 4,		do.	32,545.30	31,045.30	53	176	3	6	1,035	24	20	...
36. Gaylord slope and shaft,		Plymouth,	312,392.50	305,608.50	239	614	3	3	7,884	31	81	...
Totals,			759,663.95	736,701.15	149.96	1,646	11	12	21,226	130	195	3
Delaware, Lackawanna and Western R. R. Co.											
37. Avondale,		Plymouth township,	178,682.50	157,905.50	169.40	504	2	...	4,534	50	73	1
38. Woodward Nos. 1 and 2,		do. do.	180,832.60	155,105.60	194.70	475	1	4	4,353	36	51	2
Totals,			359,515.10	313,011.10	182.05	979	3	4	8,887	86	124	3

Lehigh Valley Coal Company.											
39. Franklin slopes	Wilkesbarre	126,754.90	123,847.90	194.50	428	3	9	4,427	39	34	. . .
40. Dorrance	do.	117,218.10	107,012.60	235.60	261	. . .	4	2,294	18	28	. . .
Totals		243,973	230,860.50	215.05	689	3	13	6,721	57	62	. . .
Red Ash Coal Company.											
41. Red Ash No. 1	Wilkesbarre township	120,791.70	120,791.70	188.80	303	2	1	3,881	15	20	. . .
42. Red Ash No. 2	do. do.	176,086.20	172,574.20	200.75	383	. . .	4	4,981	8	32	. . .
Totals		296,877.90	293,365.90	194.27	686	2	5	8,862	23	52	. . .
Miscellaneous Coal Companies.											
43. Alden Coal Company	Alden	257,787.25	248,846.90	232.20	667	1	7	6,954	18	55	. . .
44. Dodson Plymouth Coal Company	Plymouth	187,126.06	168,741.05	220.75	372	4	4	6,496	17	41	. . .
45. Parrish Coal Company	do.	302,867.45	297,969.20	205.95	569	1	1	7,971	25	74	. . .
46. Maffet, Hanover Coal Company	Sugar Notch	137,865.95	137,044.45	185.10	270	1	1	3,946	12	74	. . .
47. West End Coal Company	Mocanaqua	193,333.85	178,327.70	257.30	422	1	2	4,720	22	60	2
48. Lee, Newport Coal Company	Newport township	65,194	61,842	175.30	228	1	. . .	1,833	10	21	. . .
49. Hillman Vein Coal Company	Wilkes-Barre	118,443	91,444	251.95	249	4	1	4,800	9	24	. . .
50. Warrior Run, A. J. Davis	Hanover township	98,257	82,357	187.10	266	4	7	2,870	28	20	. . .
Totals		1,360,874.55	1,266,572.30	214.45	3,042	17	23	39,590	141	318	2

* This breaker was abandoned in August, 1891.

TABLE II—*Recapitulation.*

	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.
Lehigh and Wilkes-Barre Coal Company	2,026,495.40	1,986,589.65	181.34	5,546	22	41	56,391	284	612	11
Delaware and Hudson Canal Company	1,125,402.30	1,093,622.95	174.91	2,845	8	15	32,459	169	562	3
Susquehanna Coal Company	1,466,446.35	1,449,024.10	208.66	3,808	30	55	32,434	353	495	12
Kingston Coal Company	754,063.45	736,701.15	149.36	1,646	11	12	21,226	130	195	3
Delaware, Lackawanna and Western Railroad Company	556,315.10	513,011.10	182.05	979	3	4	8,887	80	124	3
Lehigh Valley Coal Company	243,953	230,860.50	215.05	689	3	13	6,721	55	62	. .
Red Ash Coal Company	296,847.40	295,365.40	194.37	686	2	5	8,862	23	52	. .
Miscellaneous coal companies	1,360,874.35	1,296,572.30	214.45	3,042	17	23	39,590	141	318	2
Totals	7,639,250.55	7,369,697.65	190.08	19,411	96	168	206,510	1,295	2,230	34

N. B. The Lehigh and Wilkes-Barre Coal Company sold 38,453 tons of buckwheat coal and culm which is included in their total production, 37,669 tons of which was shipped to distant markets.

8-12-91.

TABLE III.—*Showing the number of each class of Employes at each Colliery in the Fourth Anthracite District, during the year 1891.*

NAMES OF COLLIERIES.	NAMES OF PERSONS EMPLOYED INSIDE.							NAMES OF PERSONS EMPLOYED OUTSIDE.							GRAND TOTAL INSIDE AND OUTSIDE.
	Inside foremen.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total inside.	
Lehigh and Wilkesbarre Coal Company.															
1. Hollenback	1	22	44	37	10	3	117	1	3	19	42	47	1	113	230
2. Empire	1	190	190	103	63	36	583	1	3	15	145	71	1	236	819
3. South Wilkesbarre	1	29	62	30	14	12	148	1	2	5	. . . .	15	1	27	175
4. Stanton	1	25	46	61	16	6	155	1	3	23	154	39	1	221	376
5. Jersey No. 8	1	94	88	30	19	22	254	1	4	14	90	60	2	171	425
6. Sugar Notch No. 9	1	131	127	73	30	41	403	1	6	14	120	62	1	204	607
7. Lance No. 11	1	149	169	76	54	29	478	1	6	9	166	45	3	230	708
8. Nottingham	1	330	300	132	103	60	926	1	9	19	240	100	2	371	1,297
9. Reynolds	1	118	114	51	41	19	344	1	4	11	132	51	1	200	544
10. Wanamie	1	140	125	67	36	23	392	1	5	13	90	63	1	173	565
Total	10	1,228	1,265	660	386	251	3,800	10	45	145	1,179	553	14	1,946	5,746
Delaware and Hudson Canal Company.															
11. Baltimore shaft No. 2	1	30	30	24	19	5	109	1	3	9	70	26	2	111	220
12. Baltimore shaft No. 3	1	65	65	19	46	6	202	1	5	8	90	47	2	153	355
13. Baltimore tunnel	1	60	50	33	36	11	191	1	7	17	86	36	3	150	341
14. Conyngham	1	15	33	14	4	2	69	. . .	3	12	50	23	2	90	159
15. Boston	1	48	50	35	28	12	174	1	3	10	55	40	1	110	284
16. No. 2 Plymouth	1	59	65	33	18	6	182	1	4	14	58	42	2	121	303
17. No. 3 Plymouth	1	99	96	49	55	24	324	1	4	15	59	29	1	109	433
18. No. 4 Plymouth	1	95	95	49	51	16	307	1	5	10	43	34	2	95	402
19. No. 5 Plymouth	1	62	62	55	28	15	223	1	5	9	41	38	1	95	318
Totals	9	533	546	311	285	97	1,781	8	39	104	552	315	16	1,034	2,815

TABLE III—*Continued.*

NAMES OF COLLIERIES.	NAMES OF PERSONS EMPLOYED INSIDE.							NAMES OF PERSONS EMPLOYED OUTSIDE.							Grand total inside and outside.
	Inside foremen.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Susquehanna Coal Company.															
20. Nos. 1 and 4 tunnel.															
21. No. 1 shaft, G seam.															
22. No. 1 shaft, F seam.	3	333	455	230	143	71	1,235	2	30	42	111	190	3	378	1,613
23. No. 1 shaft, Lee seam.															
24. No 2 slope.															
25. No. 3 slope.	1	22	25	7	9	. . .	64	1	4	3	23	29	1	61	125
26. No. 2 shaft.	2	186	310	163	95	36	792	1	9	27	116	71	2	226	1,018
27. No. 4 slope.															
28. No. 6 shaft.															
29. No. 6 slope.	3	190	280	133	138	50	794	1	14	21	152	68	2	258	1,052
30. No. 6 tunnel.															
Totals.	9	731	1,070	533	385	157	2,885	5	57	93	402	358	8	923	3,808
Kingston Coal Company.															
31. No. 1 shaft.	1	60	30	71	25	9	196	1	8	5	. . . .	38	. . .	52	248
32. No. 2 shaft.															
33. No. 3 shaft.	2	113	80	50	33	29	307	2	15	7	162	113	2	301	608
34. No. 4 shaft.	2	46	40	50	26	12	176	*	. . . .	. . . .	. . . .	. . . .	. . .	. . . .	176
35. Gaylord.	1	130	105	43	84	37	400	1	8	10	160	34	1	214	614
Totals.	6	349	255	214	168	87	1,079	4	31	22	322	185	3	567	1,646
Delaware, Lackawanna and Western Railroad Company.															
36. Avondale.	1	124	110	43	53	10	341	1	6	23	84	48	1	163	504
37. Woodward.	1	104	93	37	45	20	300	1	5	23	71	73	2	175	475
Totals.	2	228	203	80	98	30	641	2	11	46	155	121	3	338	979

Lehigh Valley Coal Company.															
38. Franklin	1	84	63	38	35	18	239	1	11	15	103	56	3	189	428
39. Dorrance	1	45	50	20	25	6	147	1	6	12	59	35	1	114	261
Totals	2	129	113	58	60	24	386	2	17	27	162	91	4	303	689
Red Ash Coal Company.															
40. Red Ash No. 1	1	68	68	18	23	11	189	1	5	5	70	31	2	114	303
41. Red Ash No. 2	1	92	93	20	36	12	254	1	5	5	64	52	2	129	383
Totals	2	160	161	38	59	23	443	2	10	10	134	83	4	243	686
Miscellaneous Coal Companies.															
42. Alden	1	155	148	60	54	18	436	1	10	16	163	35	6	231	667
43. Dodson	1	81	75	36	38	20	251	1	6	7	76	28	3	121	372
44. Parrish	2	112	122	49	65	24	374	1	8	21	101	61	3	195	569
45. Maffet	1	69	62	7	24	7	170	1	4	7	47	38	3	100	270
46. West End	3	114	101	24	41	4	287	1	6	14	45	66	3	135	422
47. Lee	1	38	54	28	14	4	139	1	4	8	60	13	2	88	227
48. Hillman vein	1	55	55	24	11	20	166	1	2	8	52	17	3	83	249
49. Warrior Run	1	79	50	18	11	9	168	1	4	10	51	30	2	98	266
Totals	11	703	667	246	258	106	1,991	8	44	91	595	288	25	1,051	3,042

Recapitulation.

Lehigh and Wilkesbarre Coal Company	10	1,228	1,265	660	386	251	3,800	10	45	145	1,179	553	14	1,946	5,746
Delaware and Hudson Canal Company	9	533	546	311	285	97	1,781	8	39	104	552	315	16	1,034	2,815
Susquehanna Coal Company	9	731	1,070	533	385	157	2,885	5	57	93	402	358	8	925	3,808
Kingston Coal Company	6	349	255	214	168	87	1,079	4	31	22	322	185	3	567	1,646
Delaware, Lackawanna and Western Railroad Company	2	228	203	80	98	30	641	2	11	46	155	121	3	338	979
Lehigh Valley Coal Company	2	129	113	58	60	24	386	2	17	27	162	91	4	303	689
Red Ash Coal Company	2	160	161	38	59	23	443	2	10	10	134	83	4	243	686
Miscellaneous Coal Companies	11	703	667	246	258	106	1,991	8	44	91	595	288	25	1,051	3,042
Totals	51	4,061	4,280	2,140	1,699	775	13,006	41	254	538	3,501	1,994	77	6,405	19,411

* Nos. 1 and 4 breakers were destroyed by fire May 5, 1891.

TABLE IV — *List of Fatal Accidents occurring in and about the Mines of the Fourth Anthracite Mine District for the year ending December 31, 1891.*

Date of accident.	No. of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	No. of orphans.	Name of Colliery.	Location—Luzerne County.	Nature and Cause of Accident.
Jan. 3,	1	Michael Hennessey. . . .	Timberman. .	33	1	1	Franklin.	Wilkesbarre.	Fatally injured by a projecting piece of coal falling on him; died in four hours.
5.	2	John Karcheski.	Door tender. .	15	. .	. .	Slope No. 2.	Nanticoke.	Found lying at side of road near his door with his skull fractured and unconscious; a mule had just passed and it is supposed that the mule kicked him; he never recovered consciousness and died the following day at 4 o'clock a. m.
6.	3	George Wootten.	Laborer. . . .	33	. .	. .	Red Ash No. 1.	Wilkesbarre township. . .	Killed by a fall of rock while at the head of chute shoveling coal in.
8.	4	Steve Uhosz.	Footman. . . .	19	. .	. .	Breaker No. 6.	Glen Lyon.	Killed by runaway cars on surface near foot of dirt plane. [about two hours.
8.	5	John McGhegan.	Laborer. . . .	33	1	3	Avondale.	Plymouth township. . . .	Fatally injured by a fall of top coal; died in
12.	6	Paul Koons.	Miner. . . .	22	. .	. .	Hillman vein.	Wilkesbarre.	Instantly killed by a fall of fire clay in the Kidney seam; he was alone in the breast and was discovered lying dead under the rock by James Sauvage who went in to look for him.
14.	7	John Lozinski.	Miner. . . .	33	1	. .	Shaft No. 1, Forge seam.	Nanticoke.	Fatally burned by an explosion of gas; the gas accumulated while he was at work at the face and it ignited from the laborer's lamp; he died January 25, 1891.
14.	8	Lewis Russell.	Slate picker. .	14	. .	. .	Breaker No. 6.	Glen Lyon.	Killed; during a brief stop of the breaker he in some unexplained manner got into the machinery and was instantly killed; he was found badly cut lying near the elevators, where he evidently had been caught.
17.	9	David E. Roberts.	Miner. . . .	47	1	3	Shaft No. 3.	Edwardsdale.	Instantly killed by a fall of rock at face of breast; he had fired a blast and just entered under the rock when it fell.
17.	10	Louis Krynefski.	Laborer. . . .	27	. .	. .	Slope No. 2.	Nanticoke.	Fatally injured by a fall of top rock; while he was loading a car the rock fell on upper side and rolled down upon him; he died at the hospital on January 22.
Feb 9.	11	William Kreuger.	Signal boy. . .	15	. .	. .	West End.	Mocanaqua	Instantly killed; while standing on side of slope track when a trip of cars loaded with boards that was passing down, when one of the boards struck him, killing him instantly.

11,	12	Peter Eagan,	Laborer,	45	1	5	Warrior Run,	Warrior Run,	Killed at face of gangway by a large mass of coal sliding out from the upper side; two diagonal slips meeting from opposite directions was the cause of its falling without warning; the miner very narrowly escaped.
12,	13	David Fox,	Miner,	42	W.	5	Nottingham,	Plymouth,	Instantly killed by a blast; squib having missed he was trying another when the blast fired.
14,	14	John Meehan,	Laborer,	38	W.	4	Hollenback,	Wilkesbarre,	Deceased was working with Wm. Hagerty in a gangway; both were standing on an elevated board prying a piece of slate down, the board slipped causing them both to fall under the slate just as it was falling; Meehan was killed and Hagerty was injured.
20,	15	John Evans,	Machinist,	30	1	3	Breaker No. 4,	Edwardsdale,	Attempted to step across a revolving shaft and was caught and whirled around it; he was injured so that death ensued at midnight.
20,	16	Martin Conway,	Miner,	50	1	3	Shaft No. 9,	Sugar Notch,	Was about to fire a blast and before he moved away the blast exploded injuring him so that he died in two hours after; the laborer had retreated to a safe place.
21,	17	Andrew Pohalo,	Miner,	43	1	6	Gaylord,	Plymouth,	Fired a shot and immediately returned to work under a projecting piece of coal, this fell on him causing injuries from which he died that night.
21,	18	Frank Poviska,	Miner,	28	1	1	Nottingham,	Plymouth,	Fired a shot and soon after when working the coal out, a piece of coal from above fell on him causing fatal injuries; he died the same night.
23,	19	Michael Clair,	Laborer,	26			Conyngham,	Wilkesbarre,	Instantly killed; he and Evan Williams and John Barr were at work repairing guides standing on a temporary platform hanging to a rope some sixty feet beneath the proper shaft cage; at quitting time they usually pulled one another up by rope and tackle to the cage upon which they were hoisted up; at this time Williams was hoisted to the cage first, then Clair was pulled up, but in approaching the cage he missed his hold and fell back into the shaft with the result stated.
26,	20	John McAndrew,	Driver,	19			Baltimore shaft No. 3,	Wilkesbarre township,	When deceased was bringing a trip of cars out on level gangway a runaway car from a center gangway came down and collided with this trip, he on seeing the approaching runaway stepped to the opposite side, and the car on which he was riding was knocked off the track against the lower rib crushing him to death between.
28,	21	Robert J. Williams,	Miner,	30			Shaft No. 9,	Sugar Notch,	While preparing to fire a blast and upon lighting the match the blast instantly exploded, injuring him so that death ensued soon after he was carried home.

TABLE IV—*Continued.*

Date of accident.	No. of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	No. of orphans.	Name of Coll ery.	Location—Luzerne County.	Nature and Cause of Accident.
Mar. 11,	22	John Lumley.	Miner, ...	40	1	5	Warrior Run, ...	Warrior Run.	While trying to fire a blast two squibs had missed and when in the act of adjusting the third the blast exploded; Lumley was fatally injured and died the following day; Wm. Sorber and Patrick Burke were injured at the same time.
11,	23	Frank Hermonofski, . . .	Driver, ...	18	. .	. .	Shaft No. 2, ...	Nanticoke, ...	Was kicked by a mule; he walked home as if his injury was slight, but he died in a few days.
12,	24	Noah Leyshon.	Laborer. . . .	38	1	1	Hillman vein.	Wilkesbarre, ...	While in the act of oiling a pulley on slope a lump of coal which rolled from above struck him on the head, fracturing his skull and causing his death a week thereafter.
20,	25	William Tradofski. . . .	Footman, . . .	26	. .	. .	Shaft No. 2, ...	Nanticoke, ...	While trying to stop a car he went too close to the shaft and was struck and killed by the descending cage.
25,	26	Charles Vitkofski.	Laborer, . . .	40	1	5	Slope No. 2.	Nanticoke, ...	Was helping Charles Claude to put up a pair of timbers where the roof was a dangerous fire clay; an unexpected pan-shaped piece dropped from the roof and instantly killed the laborer; the miner was with him but he escaped uninjured.
Apr. 4,	27	John Pedro, ...	Laborer. . . .	28	. .	. .	Shaft No. 4, ...	Edwardsdale, ...	Was on the slope when a trip of cars was being lowered, the cars jumped the track and crushed him against a prop; the injury was chiefly to his leg and he bled to death.
13,	28	Richard Couch.	Miner.	51	1	6	Franklin, ...	Wilkesbarre, ...	Instantly killed; was walking up the slope when two of the empty descending cars above became in some manner detached and ran away; his hearing was very defective and failing to step out of the road was ran upon and killed.
15,	29	Joseph Gabrulewicy, . . .	Laborer. . . .	28	. .	. .	Shaft No. 3, ...	Edwardsdale, ...	Was at the face of breast when an unseen slip caused a projecting piece of mixed bone and slate to unexpectedly fall on him, killing him instantly.

20.	30	Edward Humphreys. . . .	Miner. . . .	42	1	3	Warrior Run.	Warrior Run.	Had fired a shot in the face of sinking slope, and upon re-entering the face he found the gas feeders on fire and while preparing to extinguish them a small piece of slate fell on him, injuring him so that death followed in two days.
20.	31	Thomas D. Thomas. . . .	Miner. . . .	49	1	3	Shaft No. 6.	Glen Lyon.	Fatally injured by a premature blast; was in the act of lighting the match and shouting alarm when the blast exploded; died the same night.
21.	32	Charles Evans.	Breaker boss. .	55	1	7	Breaker No. 4.	Edwardsdale.	Unseen and in some mysterious manner got into the rolls and was crushed to death; his body was found in the hopper and in order to get into the rolls he had to pass through a space 10 inches high by 4 feet wide.
22.	33	Joseph Plava.	Miner. . . .	29	1	1	Shaft No. 3.	Edwardsdale.	Was firing a blast and had run to hide in a corner twenty-three feet back from face of breast and below it, the squib had missed and he started to go back when the blast fired, throwing all the coal upon him, killing him almost instantly.
23.	34	John Kabiskey.	Laborer. . . .	20	. .	. .	Shaft No. 1, Forge vein. .	Nanticoke.	Was left by the miner in a cross-cut with safety lamp while he went around to rap in order to find whether or not it was nearly through; there was a small quantity of gas in the cross-cut and in the absence of the miner the laborer opened his lamp and the gas was fired; he was severely burned and died in a week thereafter.
24.	35	John Harvey.	Pumpman. . .	40	. .	. .	Lee.	Newport township. . . .	Found dead at the bottom of slope; supposed to have fallen a distance of about twenty feet.
24.	36	Ed. McCormick.	Miner. . . .	52	1	5	Dodson.	Plymouth.	While working a piece of coal out at face of breast, a piece of slate fell from roof and crushed his head against the edge of the bottom bench of coal; he died in about four hours.
24.	37	George Lewis.	Driver. . . .	21	. .	. .	Shaft No. 1.	Edwardsdale.	Instantly killed; while standing on branch watching the trip going down the slope the cars took the track upon which he was standing and ran upon him.
May 7.	38	Michael Kovitch.	Laborer. . .	36	. .	. .	Shaft No. 5.	Plymouth.	Went deliberately under a dangerous piece of rock in the absence of the miner, who had gone for help to pull it down and who had cautioned him to keep away; it fell on him injuring him so that death ensued in about four hours.
11.	39	Patrick Riley.	Laborer. . .	70	. .	. .	Slope No. 2.	Nanticoke.	Instantly killed on slope by cars; rode down on trip at 6.30 a. m. and got off safely but the next trip ran over him; he had lingered midway on the slope for some unknown reason.

TABLE IV—*Continued.*

Date of accident.	No. of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	No. of orphans.	Name of Colliery.	Location Luzerne County.	Nature and Cause of Accident.
May 15.	40	Alexander Yerashifsky,	Miner,	36	1	2	Gaylord.	Plymouth.	Both were instantly killed by a large fall of top coal; the night shift miner had told them this was dangerous and cautioned them to be careful of it; the foreman had ordered them to pull it down, but heedless of all they went to work under it and were both killed. The laborer, Joe Yerinko, was severely injured at the same time.
15.	41	Felix Welbolovitz,	Miner,	30	1	1			
29.	42	Thomas Munkley.	Footman.	33	1	1	Slope No. 2.	Nanticoke.	A car broke loose from empty trip and ran upon him at foot of slope, killing him instantly.
June 15.	43	William J. Evans.	Fire boss.	45	1	1	Conyngham.	Wilkesbarre.	While standing on cage in the shaft and in the act of pulling the wire to give the signal he in some mysterious manner fell over and down the shaft and was instantly killed; there were three men in a bucket below suspended from the cage but they did not know he had fallen until after he failed to respond to their signals.
16.	44	Thomas Durkin.	Driver.	19	.	.	Shaft No. 2.	Edwardsdale.	Was bringing a loaded car out of a breast in the Cooper seam, the bottom gave way and he and the car fell through to the Bennett seam, a distance of about twelve feet; the rock between the two seams was only six feet thick; he died in about one hour after the occurrence.
July 1.	45	Thomas A. Walters.	Miner.	43	1	8	Empire.	Wilkesbarre.	While getting ready to charge a hole for blasting at the face of breast, a large piece of top coal fell and crushed him against the gob; he died as soon as he was carried home.
10.	46	Fritz Knopka.	Laborer.	28	1	3	Slope No. 2.	Nanticoke.	Was loading car at face of gangway when a large piece of fire clay fell on him and on James Llewelyn, the miner; he was fatally hurt and died while being carried out; Llewelyn had his leg broken.
15.	47	Henry Lloyd.	Door tender.	15	.	.	Reynolds.	Plymouth.	Fell in front of trip of cars while endeavoring to stop the mules; died from his injuries the next day.

16.	48	William Shovelin.	Laborer. . . .	29	. .	. .	Avondale.	Plymouth.	Was one of four men loading top coal which had been pulled down on the gangway at the breast branch, when a piece of coal fell and struck him, killing him instantly.
16.	49	Albert Yengling.	Slate picker. .	15	. .	. .	Breaker No. 9.	Sugar Notch.	Tried to couple two railroad cars and was crushed between the jammers; died in two hours.
28.	50	Xavier Morris.	Miner. . . .	32	1	2	Maffett.	Sugar Notch.	Was opening a breast and fired a shot and immediately returned to work just as a piece of top coal was falling; he was instantly killed.
Aug. 1.	51	John H. Evans.	Miner. . . .	35	. .	. .	Dodson.	Plymouth.	Both instantly killed by a large fall of bony coal at the foot of the new rock slope to Ross seam; it fell without warning and covered a large area, 21x23 feet and 2½ feet thick.
1.	52	John Sliney.	Miner. . . .	29	1	2			
8.	53	Jenkins D. Phillips. . .	Miner. . . .	. .	1	7	Hollenback.	Wilkesbarre.	Was fatally injured by a premature blast; both he and his son were injured, and being on the night shift and no one near to help them they had to lie there until the men of the day shift came in, which was in about one and a half hours; the father died soon after being carried home.
10	54	George McReynolds. . .	Miner. . . .	53	1	6	Alden.	Alden.	Was fatally hurt by a fall of fire clay at the face of the breast; he died in a few minutes.
17.	55	John Kelley	Laborer. . . .	55	1	3	Shaft No. 9.	Sugar Notch.	Ascended the shaft on cage unknown to the engineer and was hoisted to the upper landing. They were lowering the workmen at the time, and on receiving signal from the bottom the cages were moved again. Deceased evidently was in the act of stepping off above when the cage was lowered, causing him to fall back after it. After falling a few feet his foot caught in timber which held him, and immediately the men on the surface went up and released him. His injuries were not considered serious until Sunday, August 30, when he became sick and on the 31st he died.
20.	56	William Jones.	Miner. . . .	37	1	2	Nottingham.	Plymouth.	During the previous days he had broken through the top coal, making a large cavity to which the ventilation was not yet directed. On going in on the morning of the accident, having been told that the place was safe, he went up to the cavity with his naked lamp, and instantly an explosion of gas took place, burning him so that it resulted in his death on August 27. There were good reasons to suspect that the fire-boss had shirked his duty and deceived this man by stating that his place was safe. It is hardly possible that the gas accumulated after he made his examination.
Sept. 3.	57	Henry Hearn.	Miner. . . .	28	1	2	Parrish.	Plymouth.	Shortly after starting to work in the morning he was shoveling coal back from the face of his breast when a long piece of the top bench fell on him, killing him instantly.

TABLE IV—*Continued.*

Date of accident.	No. of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	No. of orphans.	Name of Colliery.	Location—Luzerne County.	Nature and Cause of Accident.
Sept. 4.	58	Charles Anderson.	Door tender. .	14	. .	. .	Shaft No. 9.	Sugar Notch.	When crossing the main track at foot of slope immediately after a trip was started up, a car broke loose and ran back upon him, causing injuries which resulted in his death in about one week.
4.	59	James McGroarty.	Miner.	50	1	4	Baltimore tunnel	Wilkesbarre.	While deceased was on his knees drilling a hole at the bottom, a piece of bony coal fell from the side and struck him, fracturing his spine and causing other injuries. He died in about five hours thereafter.
	60	Vincent Boynofski. . . .	Miner.	35	1	. .	Shaft No. 2.	Nanticoke.	Was firing a blast, was shouting an alarm and at the same time applying fire to the match, when instantly the blast exploded. He was severely injured and died on September 15.
16.	61	Henry Opit.	Laborer. . . .	28	. .	. .	Wanamie No. 19.	Wanamie.	Attempted to cross the track in front of a trip of cars, the cars ran upon him causing injuries from which he died in about ten minutes.
21.	62	Valentine Sobylnski. . .	Laborer. . . .	34	1	4	Shaft No. 2.	Nanticoke.	A deceitful pan-shaped piece of fire clay fell upon him and killed him instantly.
28.	63	Conrad Baurer.	Laborer. . . .	60	1	. .	Baltimore slope.	Wilkesbarre township. .	A fire was burning in this mine causing the workings to be filled with irrespirable gases. Having hid his oil can a short distance down the slope on the previous Saturday night, he went through the railing put across the entrance of the slope, and was suffocated at a point about twenty feet down the slope. The accident occurred early on Monday morning.
Oct. 3.	64	George Drusock.	Laborer. . . .	22	. .	. .	Empire.	Wilkesbarre.	He was laboring with a miner named Michael Brennan opening a breast on the bottom split of Red Ash seam; while loading a car a large piece of top coal unexpectedly loosened and fell on him, injuring him so that death ensued in about five hours.
16.	65	Jacob Hochreiter. . . .	Laborer. . . .	53	1	3	Empire breaker	Wilkesbarre.	While assisting to unload a truck load of props at railroad, and in the act of cutting the stakes with an ax, they suddenly gave way and one of the timbers rolled upon him, breaking his neck and killing him instantly.

20.	66	Peter Levelle.	Footman. . .	. .	. .	. .	Hillman vein.	Wilkesbarre.	While unhitching cars at bottom of slope, the top rails of cars came together at the angle, and crushed his head between. It resulted in his death in a few days.
26.	67	John Onder.	Laborer. . .	40	. .	. .	Franklin.	Wilkesbarre.	Instantly killed by a fall of rock which fell just as he was approaching the face of the breast in the morning. Evidently the miner, John Green, had failed to make proper examination before permitting the laborer to go in.
Nov. 2.	68	William Sarber.	Laborer. . .	26	. .	. .	Warrior Run.	Warrior Run.	He and the miner, John E. Richards, were firing a blast. The match had been extinguished on the first trial, and in the second the blast fired before they got 'any distance away. Sarber was fatally injured and died at the foot of the slope while being carried out. Richards was only slightly hurt.
7.	69	James Kingston.	Miner. . . .	41	1	5	Red Ash No. 1.	Wilkesbarre township. .	Was preparing place to put a prop up when a large stone fell on him, causing injuries which proved fatal five hours after.
8.	70	Henry R. Jones.	Fireboss. . .	32	1	2	Shaft No. 1, Lee seam. .	Nanticoke.	This disaster occurred on Sunday at 4 p. m. A party of twelve persons besides the three fire-bosses were at work making preparations to reverse the air current for the underground shaft workings. The second opening having been recently completed, it was intended to make this a permanent return way for the ventilation. At 4 o'clock p. m. some of the men noticed their lamps (all had safety lamps) filling with gas, and spoke of it to others. Instantly an explosion took place, resulting fatally to these twelve persons. Daniel R. James and Edward Williams were severely injured and a laborer, who was a short distance away, escaped without injury. (For further description see report.)
	71	William Jonathan, . . .	Fireboss. . .	35	1	3			Fatally injured.
	72	John Arnot, ...	Fireboss. . .	37	1	3			Instantly killed.
	73	Thomas Lloyd.	Runner. . . .	25	. .	. .			Instantly killed.
	74	Joseph Kobofski.	Laborer. . .	27	1	3			Fatally injured.
	75	David T. Smith.	Miner. . . .	29	. .	1			Fatally injured.
	76	Thomas P. Powell, ...	Bratticeman. .	55	1	. .			Fatally injured.
	77	Thomas R. Thomas. . . .	Bratticeman. .	18	. .	. .			Fatally injured.
	78	Caleb Gething.	Mason. . . .	50	1	6			Fatally injured.
	79	William J. Williams. . .	Mason. . . .	49	1	3			Fatally injured.
	80	William J. Williams, Jr..	Laborer. . .	22	. .	. .			Fatally injured.
	81	Thomas Bozak.	Laborer. . .	24	. .	. .			Fatally injured.
17.	82	Napoleon DeMontague. .	Miner. . . .	39	1	6	Lance No. 11.	Plymouth.	Returned immediately after blasting and a piece of slate and bone coal fell on him, killing him instantly. He was working driving an air-way parallel with gangway.
17.	83	Charles Cutacavadge. . .	Laborer. . .	22	. .	. .	Shaft No. 9.	Sugar Notch.	Instantly killed: a large mass of rock fell at face of gangway, the edge of which caught both miner and laborer. The latter was killed and the former severely injured.

TABLE IV—*Continued.*

Date of accident.	No. of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	No. of orphans.	Name of Colliery.	Location—Luzerne County.	Nature and Cause of Accident.
Nov. 19.	84	Anthony Sylboski.	Miner. . . .	30	1	2	Nottingham.	Plymouth.	Was fatally hurt by the brow of a slip of coal falling on him when he was under it getting ready to drill a hole. He died on the way out of the mine.
19.	85	John Savier.	Laborer. . . .	23	. .	. .	Nottingham.	Plymouth.	When helping the miner to extend the track in the Ross vein gangway, a piece of slate fell from the roof and struck him, killing him instantly.
27.	86	James S. Dand.	Driver. . . .	18	. .	. .	Shaft No. 9, George seam.	Nanticoke.	Fatally injured. Gas had accumulated below a wall in a heading near the foot of shaft, Dand putting his lamp at the gutter hole at the bottom of wall on upper side and not knowing of any gas existing, ignited it. The explosion which followed blew the wall out upon him, injuring him so that death ensued on December 2.
30	87	John Peel.	Miner. . . .	36	1	3	Shaft No. 1, Lee seam. .	Nanticoke.	Instantly killed by a fall of mixed bone and rock. He went to work under it, knowing it was dangerous but thought it would not fall until he had another car loaded.
Dec. 7.	88	James Buskie.	Miner. . . .	29	1	2	Dodson.	Plymouth.	Killed while in the act of lighting a match to fire a blast. It exploded before he had time to escape.
12.	89	James Kittrick.	Miner. . . .	24	S.	. .	Hillman vein.	Wilkesbarre.	Fatally injured by an explosion of gas. He had drilled a hole that morning and leaving the face clear of gas, went back to make a cartridge to charge it. On returning to the face a body of gas had accumulated and it exploded. Hugh Jones, the foreman, was going up the breast at the same time and he was severely injured. Kitterich died that night.
18.	90	John Dougherty.	Laborer. . . .	28	1	1	Baltimore tunnel. . . .	Wilkesbarre.	Fatally hurt; while standing watching Anthony Gillespie prying a piece of coal down another piece of coal from an upper tier fell unexpectedly upon him, causing injuries which resulted fatally in a few minutes.

20.	91	Joseph Pike,	Fire-boss,	35	1	1	Shaft No. C,	Glen Lyon,	While engaged watching the air during the repairing of the fan he in some mysterious manner fell down the shaft and was instantly killed. There was a floored space of fourteen feet between the rear of the fan and nearest edge of the shaft and the small doors were open admitting day-light. No one saw him fal.
24.	92	James Butler,	Laborer,	27	S.		Shaft No. 3,	Plymouth,	Fatally injured; the miner, Michael Wright, was withdrawing the tamping from a hole which he had failed to fire, and the powder exploded injuring Wright seriously and Butler fatally. He died in two hours.
24.	93	Anthony Burmack,	Miner,	28			Lance No. 11,	Plymouth,	Fatally injured by a premature blast. He died the same day two hours after being admitted to the hospital.
30.	94	James Millroy,	Miner,	47	1	5	Woodward,	Plymouth township,	Instantly killed by a fall of coal; was working coal loosened by a shot when an upper bench fell on him, killing him instantly.
31.	95	John R. Davies,	Miner,	32	1	3	Stanton,	Wilkesbarre,	Both fatally burned by an explosion of fire damp occurring while they and Moses Jones were on the gangway going in to work at about 7.30 a. m. They were walking in against a strong current of air, carrying locked safety lamps and unexpectedly met a body of fire damp which in some manner exploded. Jones was also severely burned. Davies died January 6, 1892, and Malia died January 10, 1892. (See report.)
	96	Thomas Malia,	Laborer,	30					
		Totals,			52	177			

Recapitulation of Fatal Accidents.

OCCUPATION.	Number.	Per Cent.	NATIONALITY.	Number.	Per Cent.	CAUSES OF ACCIDENTS.	Number.	Per Cent.
Miner,	37	38.5	Welsh,	28	29.2	By explosions of CH_4 gas,	19	19.8
Laborer,	30	31.2	Irish,	21	21.9	By falls of roof and coal,	37	38.5
Masons, brattice and timbermen,	5	5.2	Polish,	26	27.0	By falling down shafts,	3	3.2
Drivers and runners,	7	7.3	Hungarian,	5	5.2	By mine-cars underground,	11	11.4
Firebosses,	5	5.2	American,	3	3.2	By explosions of powder and blasts,	12	12.5
Door-tenders,	3	3.2	English,	8	8.3	By miscellaneous causes underground,	6	6.3
Footmen,	3	3.2	German,	2	2.1	By miscellaneous causes on surface,	8	8.3
Pumpman,	1	1.0	Canadian	1	1.0			
Outside workmen,	3	3.2	Swede,	2	2.1			
Slate-pickers,	2	2.0						
Total,	96	100.0	Total,	96	100.0	Total,	96	100.0

TABLE V.—*List of Non-Fatal Accidents occurring in and about the Mines of the Fourth Anthracite Mine District, for the year ending December 31, 1891.*

Date of accident.	No. of accident.	NAME OF PERSON.	Occupation.	Age.	Married or single.	No. of children.	Name of Colliery.	Location—Luzerne County.	Nature and Cause of Accident.
Jan. 1.	1	F. Moorotskey,	Laborer,	27	M.	2	Shaft No. 2,	Nanticoke,	Painfully bruised and cut by a fall of top rock.
5.	2	Frank Shumansky,	Driver,	15	S.	. .	Shaft No. 1,	do.	Cheek bone fractured and face badly cut by being kicked by a mule.
9.	3	J. K. Allegar,	Fire-boss,	40	M.	. .	Shaft No. 5,	South Wilkesbarre,	Leg fractured at two points; while on the cage descending the shaft it caught in something which held it until a slack of about six feet of rope was on, it then fell that distance, and the jar broke the supporters of the cage roof, which struck him and caused the injury.
9.	4	Stanley Vicker,	Laborer,	28	S.	. .	Nottingham,	Plymouth,	Cut on head and bruised about ribs by a fall of coal.
10.	5	William Purles,	do.	25	S.	. .	Dodson,	do.	Severely cut on arm and had one finger fractured, caught between car and roof while riding up the slope.
14.	6	Rees Williams,	Miner,	33	M.	3	Shaft No. 1, Forge seam,	Nanticoke,	Faces and hands of all, more or less burned by an explosion of gas. While they were together at face of Williams' gangway, the latter noticing a small piece of rock loose, took a pick to pull it down, a larger piece came than was expected, and brought a small quantity of gas upon their lamps, which was ignited causing the injuries.
14.	7	John Shafer,	do.	27	M.	1			
14.	8	Jacob Hildock,	Laborer,	28	S.	. .			
14	9	John Drushlinskey,	do.	24	S.	. .			
19.	10	James Finn,	Driver,	16	S.	. .	Reynolds,	Plymouth,	Two ribs fractured—caught between cars.
20.	11	John Evans,	Laborer,	. .	. .	. .	Warrior Run,	Warrior Run,	Leg fractured in two places by a fall of top slate.
23.	12	David P. Jones,	Brattice-man,	34	M.	3	Shaft No. 2,	Nanticoke,	Slightly burned about head and face by an explosion of gas.
26.	13	Henry Smith,	Driver,	16	S.	. .	Shaft No. 1, Forge Seam,	Nanticoke,	Compound fracture of leg; car jumped track and crushed him against the rib.
26.	14	William Shecaster,	Loader,	33	M.	6	Nottingham Breaker,	Plymouth,	Foot slipped, causing him to be caught between a car and breaker timber and he was badly crushed.
27.	15	Michael Ruggle,	Driver,	18	S.	. .	Slope No. 4,	Nanticoke,	Leg fractured by being caught between cars.
27.	16	Peter Williams,	Laborer,	26	M.	. .	Empire,	Wilkesbarre	Slightly burned by an explosion of gas.
Feb. 3.	17	Peter Crumskey,	do.	29		. .	Shaft No. 4,	Edwardsdale,	Injured on head and foot by a fall of coal.
7.	18	John Separko,	do.	35		6	Alden,	Alden,	Leg broken and cut on back and arm by a fall of fire-clay.
10.	19	Joseph Staknish,	Car-coupler,	21		. .	Breaker No 6,	Glen Lyon,	Head squeezed between mine cars; painfully but not seriously injured.

	14.	20	William Hagerty, . .	Miner, ...	40	M.	4	Hollenback, ...	Wilkesbarre, ...	Painfully injured by prying a piece of rock down and falling under it as it came. John Meeham, the laborer, was killed at the same time.
	18.	21	Michael Toole, ...	do. . . .	33	M.	. .	Balt. Shaft No. 3, . . .	Wilkesbarre township,	Back and head painfully hurt while prying down coal.
	20.	22	John R. Davies, . . .	Laborer, . . .	35	M.	2	Franklin, ...	Wilkesbarre, ...	Scalp wound and ankle sprained by a fall of coal.
Mar.	4.	23	William O. Jones, . .	Miner, ...	28	M.	. .			The three were more or less burned on faces and hands by an explosion of gas while putting brattice up near the face of gangway. Rees B. Jones had his ankle sprained and George Vida was cut on face at the same time.
	4.	24	Neal Dougherty, . . .	Laborer, . . .	24	S.	. .	Nottingham, ...	Plymouth, ...	
	4.	25	John J. Morris, ...	Carpenter, . .	29	M.	1			
	5.	26	William Rooney, . . .	Slate-picker, .	14	S.	. .	Woodward breaker, . .	Plymouth township, .	Knee dislocated by slipping on chute and falling.
	6.	27	Hopkin Williams, . .	Door-tender, .	15	S.	. .	Slope No. 2, ...	Nanticoke, ...	Cut and bruised about hips by falling under a car.
	6.	28	Frank Wanto, ...	Laborer, . . .	24	S.	. .	Shaft No. 1, Lee Vein, .	do.	Arm and shoulder severly bruised by coal falling on him from the rib.
	6.	29	Valentine Adamchick,	Miner, ...	45	M.	5	Shaft No. 1, Lee Vein, .	do.	Severely burned on face, arms and hands by carelessly igniting a body of gas.
	7.	30	Thomas Owens, . . .	do. . . .	32	S.	. .	Jersey No. 8, ...	Ashley, ...	Severely injured by a premature blast. He cut the match too short.
	7.	31	John Degman, ...	Footman, . . .	21	M.	. .	Woodward, ...	Plymouth township, .	Arm broken by being caught between a car and upright shaft timber.
	10.	32	Timothy Murphy, . .	Runner, . . .	25	S.	. .	Shaft No. 2, ...	Nanticoke.	Foot severely crushed by a car.
	11.	33	William Sorber, . . .	Laborer, . . .	22	S.	. .	Warrior Run, ...	Warrior Run, ...	Both painfully injured by a premature blast. The squib had missed firing and they had returned to renew it and when drawing the needle the blast fired. John Lumley, the miner, was fatally injured at the same time.
	11.	34	Patrick Burke, ...	do. . . .	26	M.	1			
	13.	35	Conrad Pomranko, . .	Runner, . . .	17	S.	. .	Shaft No. 2, ...	Nanticoke.	Leg fractured; caught under the bumper of a moving car.
	14	36	John Dulebba, ...	Loader. . . .	28	S.	. .	Breaker No. 6, ...	Glen Lyon, ...	Arm crushed between bumpers of cars when in the act of coupling.
	18.	37	Michael O. Brien, . .	Runner, . . .	18	S.	. .	Shaft No. 1, Forge Seam,	Nanticoke, ...	Severely squeezed; caught between a car and door-frame.
	24.	38	David B. Thomas, . .	do. . . .	24	M.	3	Tunnel No. 6, ...	Glen Lyon, ...	Leg fractured; car jumped track causing rear end to swing over against him.
	25.	39	Nicholas Hanson, . .	Laborer, . . .	50	S.	. .	Alden, ...	Alden.	Leg broken and badly injured by a fall of top coal.
	26.	40	John Hotchkiss, . . .	Oiler.	16	S.	. .	Stanton Breaker, ...	Wilkesbarre, ...	Leg painfully bruised by being caught between cars when in the act of coupling.
April	4.	41	Thomas Hughes, . . .	Laborer, . . .	27	M.	4	Slope No. 6, ...	Glen Lyon, ...	Leg fractured by a premature blast. His match was too short.
	6.	42	Andrew Malachefski,	Miner, ...	32	M.	2	Alden, ...	Alden, ...	Face and hands slightly burned by an explosion of gas.
	8.	43	Gregory Smallack, . .	do. . . .	32	M.	1	Shaft No. 4, ...	Plymouth, ...	Back bruised by a fall of bony coal.
	8.	44	William Jones, ...	Door-tender, .	15	S.	. .	Shaft No. 1, Forge Seam,	Nanticoke, ...	Four fingers crushed by falling with his hand under wheel of car.
	9.	45	Henry Snyderhite, . .	Door-tender, .	14	S.	. .	Shaft No. 4, ...	Plymouth, ...	Leg fractured by falling under cars.
	17.	46	Wojciect Hudziah, . .	Laborer. . . .	35	M.	1	Shaft No. 1, George seam,	Nanticoke, ...	Injured about back and hips by a fall of roof.
	20.	47	Thomas Richards, . .	Miner.	27	S.	. .	Shaft No. 1.	Edwardsdale, ...	Leg fractured by a premature blast.
	21.	48	Peter Standera, . . .	do. . . .	44	M.	4	Shaft No. 1, Forge seam,	Nanticoke, ...	Painfully bruised by the fall of rock which he was pulling down.
	22.	49	John McCarthy, . . .	Driver, ...	16	S.	. .	do. do.	do.	Foot crushed between cars.
	25.	50	Henry Murton. . . .	Runner, . . .	18	S.	. .	do. do.	do.	Arm broken and hips bruised; struck by runaway cars.
	28.	51	Michael Biniac, . . .	Miner, ...	37	M.	4	do. do.	do.	Leg fractured by a fall of slate.
	28.	52	Benjamin Ross, . . .	Laborer, . . .	25	M.	2	Franklin, ...	Wilkesbarre, ...	Back painfully hurt by a fall of top coal.
May	4.	53	John Sobble, ...	do. . . .	25	S.	. .	Wanamie, ...	Wanamie.	Severely cut on leg by falling under cars on slope while trying to board them.
	4.	54	George Surgan, . . .	Miner, ...	30	M.	2	Slope No. 2, ...	Nanticoke.	Face, hands and neck severely burnod by an explosion of gas.

TABLE V—*Continued.*

Date of accident.	No. of accident.	NAME OF PERSON.	Occupation.	Age.	Married or single.	Number of children.	Name of Colliery.	Location—Luzerne county.	Nature and Cause of Accident.
May 4.	55	Daniel Kilroy. . . .	Miner. . . .	61	S.	. .	Franklin.	Wilkesbarre.	Back severely scratched and bruised by a fall of bony coal.
5.	56	Daniel Powell. . . .	Laborer. . .	50	M.	6	Stanton.	do.	Painfully hurt about hips by a prop falling on him.
6.	57	John Wall.	Runner. . . .	26	S.	. .	Reynolds.	Plymouth.	Severely cut on leg; car jumped the track and caused him to fall under.
8.	58	Henry Stephens. . .	Miner. . . .	32	M.	1	Wanamie.	Wanamie.	Face and hands slightly burned by an explosion of gas.
11.	59	James O'Dillon. . .	do. . . .	35	M.	6	Shaft No. 2.	Nanticoke.	Back painfully bruised and cut on arm by a fall of slate.
12.	60	John Vitch.	Laborer. . .	23	S.	. .	do.	do.	Back painfully injured by a fall of top rock.
12.	61	David Blythe. . . .	Mirer. . . .	30	M.	2	Slope No. 4.	do.	Spine fractured; struck by a piece of rock which he was pulling down.
12.	62	Edward Clocker. . .	do. . . .	42	M.	6	Empire.	Wilkesbarre.	Two ribs fractured by a fall of coal.
13.	63	Enoch I. Jones. . .	do. . . .	49	M.	5	Dorrance.	do.	Ankle fractured and severe bruises about shoulders by a fall of coal.
13.	64	John McNally. . . .	Carpenter. . .	55	M.	13	Empire.	do.	Severely injured by a blast bursting through pillar; did not heed the alarm given.
13.	65	Stephen McGrath. . .	Laborer. . .	42	M.	10	Dorrance.	do.	Painfully hurt between shoulders by a fall of rock.
14.	66	David J. Davies. . .	Miner. . . .	30	M.	. .	Red Ash No. 2.	do.	Knee disjointed and cut on leg by a fall of rock.
14.	67	John Shipkoski. . .	do. . . .	43	M.	2	Slope No. 6.	Glen Lyon.	Foot slipped on a piece of sheet-iron causing him to fall under a car; was severely injured.
15.	68	Peter Yeshinsko. . .	Laborer. . .	34	M.	2	Gaylord.	Plymouth.	Severely injured by a fall of top coal. Alex. Yarosh and Felix Weibolovitz were killed by same fall.
19.	69	James Hanlon. . . .	Slate picker. .	15	S.	. .	Baltimore tunnel. . .	Wilkesbarre.	Arm torn out of socket; caught between pulley and belt in breaker.
20.	70	Thomas Richards. . .	Driver-boss.	28	M.	1	Lance No. 11.	Plymouth.	Severely injured; squeezed between a car and shaft timber.
25.	71	John Metzgar. . . .	Miner. . . .	41	M.	6	Baltimore tunnel. . .	Wilkesbarre.	Foot badly crushed by a fall of coal; bones not fractured.
28.	72	Edward Powell. . . .	Driver. . . .	18	S.	. .	Franklin.	do.	Arm broken; caught between top of car and door-frame.
28.	73	Zachariah Hanson. .	Laborer. . .	34	M.	4	Shaft No. 1, Forge seam.	Nanticoke.	Arm broken by a fall of top slate.
June 1.	74	John P. Thomas. . .	Miner. . . .	30	M.	. .	Jersey No. 8.	Ashley.	Burned by an explosion of gas.
4.	75	George McHale. . . .	Driver. . . .	14	S.	. .	Shaft No. 4.	Edwardsdale. . . .	Arm broken by a kick from mule.
6.	76	William Duffy. . . .	Plane-runner.	34	M.	1	Reynolds.	Plymouth.	Leg crushed between cars; necessitating amputation.
11.	77	Lewis Harris. . . .	Miner. . . .	41	M.	6	Franklin.	Wilkesbarre.	Leg fractured. . . . . A piece of rock 8x4 feet and 8 inches thick fell on them.
11.	78	Thomas Jones. . . .	Laborer. . .	35	S.	. .			Painfully cut and bruised.
11.	79	William Gould. . . .	Miner. . . .	58	W.	1	Alden.	Alden.	Both painfully burned by an explosion of gas; carried naked light to face of breast against orders, and ignited a small body of gas.
11.	80	Samuel Burrage. . .	do. . . .	35	M.	2			

	13,	81	Andrew Deceflsk,	do.	34	M.	3	Shaft No. 9,	Sugar Notch,	Seriously injured on back and side by a fall of top coal.
	16,	82	Dominick Shabiski,	Laborer,	25	S.		Lance No. 11,	Plymouth,	Faces and hands painfully burned by an explosion of gas; the laborer told driver to drive up, and gas was ignited.
	16,	83	William Roberts,	Driver,	19	S.				
	18,	84	George Weatherow,	Miner,	54	M.	9	Conyngham,	Wilkesbarre,	Burned by an explosion of gas.
	18,	85	Thomas McGoff,	do.	35	M.	3	Shaft No. 2,	Nanticoke,	Injured about back and hips by a fall of top coal.
July	1,	86	Garfield Davies,	Slate-picker,	13	S.		Empire breaker,	Wilkesbarre,	Foot crushed by being caught in the dirt-screen; necessitating amputation.
	6,	87	John Updegrove,	Laborer,	24	S.		Dorrance,	do.	Several ribs fractured; squeezed between a car and prop.
	10,	88	James Llewelyn,	Miner,	44	M.	7	Slope No. 2,	Nanticoke,	Leg fractured by a fall of fireclay. Fritz Knopka was killed at the same time.
	11,	89	Axtle Johnson,	Laborer,	21	S.		Shaft No. 9,	Sugar Notch,	Leg fractured near ankle by a lump of coal rolling upon him.
	14,	90	Thomas Goss,	Runner,	18	S.		Red Ash No. 2,	Wilkesbarre twp.,	Foot painfully lacerated by a car jumping the track and running upon him.
	15,	91	David Evans,	Door-tender,	15	S.		Slope No. 2,	Nanticoke,	Skull slightly fractured by a kick from a mule.
	17,	92	Hugh F. Owens,	Miner,	25	S.		Empire,	Wilkesbarre,	Spine seriously fractured by a fall of roof; died September 1, 1891 at the Wilkesbarre hospital.
	21,	93	Mavack Jumpella,	Laborer,	27	S.		Shaft No. 1, Forge seam,	Nanticoke,	Seriously cut on back by a fall of top slate.
	23,	94	Edgar Reed,	do.	30	S.		Warrior Run,	Warrior Run,	Leg fractured near ankle while escaping from a fall of roof.
	25,	95	John Magloski,	Mason,	28	M.		Shaft No. 6,	Glen Lyon,	Burned about lower part of body; fired gas in an old breast.
Aug.	1,	96	Henry Blaine,	Footman,	21	S.		Franklin,	Wilkesbarre,	Severely squeezed about hips; caught between cars at foot of breaker-plane.
	6,	97	Morgan D. Rosser,	Supt.,	50	W.	8	Shaft No. 3,	Edwardsdale,	Faces and hands painfully burned by an explosion of gas; entered a body of gas unexpectedly during the existence of a squeeze of the pillars.
	6	98	John Edwards,	Laborer,	63	M.	2			
	7,	99	Thomas J. Lewis,	Timberman,	55	M.	4	Woodward,	Plymouth township,	Ankle fractured by a fall of roof.
	8,	100	Ivor Phillips,	Laborer,	20	M.	1	Hollenback,	Wilkesbarre,	Severely injured about head and leg by a premature blast. His father, J. D. Phillips was fatally injured by the same blast.
	11,	101	James Duffy,	do.	32	M.	2	Dorrance	do.	Painfully injured about arm, head and body by a fall of coal.
	21,	102	Isaac Evans,	Door-tender,	16	S.		Woodward,	Plymouth township,	Thigh broken by being jammed between a car and door.
	22,	103	Edward Williams,	Miner,	36	M.	3	Shaft No. 9,	Sugar Notch,	Face and hands slightly burned by an explosion of gas.
	27,	104	John Griffith,	Rockman,	33	M.		Stanton,	Wilkesbarre,	Slight fracture of skull caused by a fall of rock.
	29,	105	Joseph Boshinski,	Miner,	31	S.		Shaft No. 1, Forge seam,	Nanticoke,	The former was severely burned on face, hands and back, and the other slightly on face and hands by an explosion of gas.
	29,	106	John Lauch,	Laborer,	36	M.	3			
	31,	107	Zigmund Roland,	do.	38	S.		Shaft No. 1, Lee seam,	do.	Several toes badly crushed by a fall of rock.
	31,	108	David J. Thomas,	do.	23	S.		Slope No. 2,	do.	Jaw-bone fractured and bruised on head by a fall of fireclay.
	31,	109	Daniel Gallagher,	Co-laborer,	32	S.		Gaylord,	Plymouth,	Leg broken; caught between cars.
Sept.	2,	110	David Price,	Laborer,	21	S.		Shaft No. 2,	Nanticoke,	Faces and hands burned by an explosion of gas which accumulated after firing a blast.
	2,	111	Louis Lateskofski,	do.	24	S.				
	4,	112	Michael Wright,	Miner,	45	M.	1	Shaft No. 3,	Plymouth,	Struck by a piece of coal thrown by a blast; painfully injured.
	8,	113	Charles Cacaus,	do.	40	M.	2	Lance No. 11,	do.	Skull slightly fractured by a premature blast.
	9,	114	Peter Aigledinger,	Footman,	54	M.	5	Empire,	Wilkesbarre,	Struck on head by a piece of coal falling down the shaft and glancing from the cage; severely injured.
	12,	115	John Oride,	Laborer,	27	S.		Reynolds,	Plymouth,	Jaw broken and face badly bruised; pushed a car over head of slope before hitching to rope and rode on it to bottom.
	14,	116	Wash. Setchko,	do.	24	M.	1	Slope No. 2,	Nanticoke,	Leg broken by a fall of fire-clay

TABLE V—*Continued.*

Date of accident	No. of accident	NAME OF PERSON.	Occupation.	Age.	Married or single.	No. of children.	Name of Colliery.	Location Luzerne County.	Nature and Cause of Accident.
Sept 16.	117	William Jones.	Timberman.	21	S.		Shaft No. 5.	Plymouth.	Fell a height of about 125 feet down shaft. The hemp rope by which they were being hoisted broke; each received a compound fracture of leg and were badly bruised.
16.	118	Morgan Jones.	do.	26	M.	3			
17.	119	Michael Shining.	Laborer.	35	S.		Wanamie.	Wanamie.	Right arm broken by being struck by coal thrown from a blast.
22.	120	Hiram Burke.	Laborer.	20	S.		Mallet breaker.	Sugar Notch.	Small bone of leg fractured; caught under a car.
22.	121	Frank Magloski.	do.	25	M.		Boston.	Plymouth township.	Severely cut on back by a piece of coal falling from the side.
23.	122	George F. McGinnis.	Miner.	30	M.	2	Shaft No. 1, Lee seam.	Nanticoke.	Both were severely burned by an explosion of gas. When pulling top coal down it brought gas with it and drove on their naked lamps.
23.	123	Michael Grabofski.	Laborer.	28	M.	1			
30.	124	James Martin.	Runner.	18	S.		Dodson.	Plymouth.	Small bone of leg fractured while coupling cars.
Oct. 1.	125	V. E. Chapin.	Headman.	35	M.	2	West End.	Mocanaqua.	Leg broken; failed to unhook the car at head of slope and it ran upon him.
2.	126	Joseph Rusinik.	Laborer.	45	M.	3	Red Ash No. 2.	Wilkesbarre twp.	Back and sides bruised by a fall of rock.
6.	127	William Bolts.	do.	22	S.		Empire.	Wilkesbarre.	Leg badly cut by a fall of rock.
6.	128	Ludwig Leshofski.	Miner.	26	M.	1	Shaft No. 2.	Nanticoke.	The former was burned on head and body and the latter was severely injured. A fall of rock came on the latter and brought gas on their lamps; this exploded and burned the miner.
6.	129	Adam Veshnofski.	Laborer.	26	M.				
10.	130	David W. Phillips.	Helper, driver.	15	S.		Parrish.	Plymouth.	Compound fracture of right leg and of left arm; fracture of right arm and body injured; was struck down and ran upon by a car on slope air-way.
10.	131	James Sarchfield.	Miner.	51	M.	6	Boston.	Plymouth township.	Leg broken and hip bruised by a fall of bony coal. James Coyne was slightly hurt at the same time.
10.	132	John Schrum.	Slate picker.	20	S.		Lance No. 11 breaker.	Plymouth.	Leg and arm broken; caught and pulled around line shaft coupling in breaker.
19.	133	Frank Gashefski.	Laborer.	25	S.		Shaft No. 3.	Plymouth township.	Right foot crushed by a fall of coal from side.
21.	134	Thomas C. Davis.	Rockman.	40	M.	3	Stanton.	Wilkesbarre.	Leg fractured; compressed air drilling machine got loose and fell on him.
22.	135	Elmer Welch.	Laborer.	24	S.		West End.	Mocanaqua.	Collar-bone broken by being squeezed between a car and rib.
24.	136	David Case.	Carpenter.	28	M.	1	Nottingham breaker.	Plymouth.	Leg broken, cut about head and otherwise bruised; caught by a belt in breaker.
28.	137	John G. Brislin	Miner.	38	M.	1	Warrior Run.	Warrior Run.	Severe wound on scalp; caused by a fall of slate when knocking a prop out.
29.	138	Ed. J. Phillips.	Driver.	17	S.		Shaft No. 6.	Glen Lyon.	Wrist fractured by a car door closing and striking him.
Nov. 4.	139	Richard Evans.	do.	16	S.		Red Ash No. 1.	Wilkesbarre twp.	Severely cut on thigh by falling under cars.
5.	140	Edward Francis.	Runner.	27	M.		Dodson.	Plymouth.	Knee crushed between cars.
6.	141	Ignatz Poloski.	Miner.	42	M.	4	Shaft No. 2.	Nanticoke.	Both legs fractured by a fall of coal.

	6.	142	Michael Sullivan,	Driver,	16	S.		do.	do.	Arm broken; caught between a car and mule.
	8.	143	Daniel R. James,	Bratticeman,	27	M.	3	Shaft No. 1, Lee seam,	do.	Severely burned on faces and hands by an explosion of gas. Twelve other persons were either killed or fatally injured by same explosion (see report).
	8.	144	Ed. J. Williams,	do.	21	M.				
	9.	145	John Forrest,	Laborer,	30	S.		Red Ash No. 2,	Wilkesbarre twp.,	Leg crushed and body bruised by a fall of top slate; foot was amputated
	17.	146	Victor Miskell,	Miner,	26	S.		Shaft No. 9,	Sugar Notch,	Leg broken and body painfully injured by a fall of rock. Charles Cutacavadge was killed by same fall.
	19.	147	Frank Pouse,	do.	22	S.		Slope No. 6,	Glen Lyon,	Face and hands burned by an explosion of gas; went over a danger mark into an old breast.
	21.	148	Paul Tauber,	do.	36	M.	2	Slope No. 3,	West Nanticoke,	Leg broken by a fall of coal; had tried to pull it down and failed.
	27.	149	Albert Allen,	do.	33	M.		Warrior Run,	Warrior Run,	Slightly injured by a fall of coal and rock; returned too soon after a blast.
Dec.	1.	150	Joseph Pugh,	do.	40	W.	3	Shaft No. 4,	Edwardsdale,	All more or less burned. A fall of coal drove gas from a cavity in the roof above the timber down upon their naked lamps and an explosion occurred. They used naked lights against the orders of the foreman who apprehended just what occurred.
	1.	151	Evan Price,	do.	38	M.	3			
	1.	152	Thomas Williams,	Laborer,	24	S.				
	3.	153	William Boyer,	Driver,	17	S.		do.	Plymouth,	Leg fractured near ankle; struck by oil-box of car when he was unhitching his mule.
	3.	154	John Kudalski,	Miner,	32	M.		Dodson,	do.	Several cuts on head. He refused to heed the warning of next miner and blast bursting through pillar from heading and injured him.
	4.	155	John T. Lewis,	Lumberman,	51	M.		Franklin,	Wilkesbarre,	Eye severely burned; came in contact with another person's lamp while riding down the slope.
	4.	156	John Pesock,	Miner,	26	S.		do.	do.	Right leg severely bruised by a fall of slate; he was prying an under piece down.
	7.	157	James Anwyl,	Stable boss,	63	M.	8	Warrior Run,	Warrior Run,	Hip dislocated and bruised; struck down and ran upon by a car.
	11.	158	Howard Morgan,	Driver,	15	S.		Shaft No. 4,	Edwardsdale,	Severe cut on thigh; car jumped track and ran against him.
	12.	159	Hugh Jones,	Mine foreman,	35	M.	1	Hillman vein,	Wilkesbarre,	Severely bruised and burned by an explosion of gas in James Kittrick's breast. The latter was fatally injured the same time.
	18.	160	William P. Price,	Miner,	65	M.	8.	Gaylord breaker,	Plymouth,	One rib fractured; struck by a car running between plane and shaft.
	22.	161	Constine Lukashefski,	Laborer,	22	S.		Breaker No. 5,	Nanticoke,	Leg fractured near ankle; a long prop-timber rolled upon him.
	24.	162	James Wren, Sr.,	Miner,	48	M.	5	Alden,	Alden,	Both painfully burned by an explosion of gas. It accumulated at the face during a short absence and on their return the gas fired from their lamps.
	24.	163	James Wren, Jr.,	Laborer,	22	S.				
	24.	164	Michael Wright,	Miner,	45	M.	5	Shaft No. 3,	Plymouth,	Severely burned and injured by charge of powder exploding while he was withdrawing the tamping. His laborer Jas. Butler was fatally hurt at the same time
	29.	165	Michael Hardman,	Laborer,	30	M.		Nottingham,	do.	Painfully injured about hips by a fall of coal.
	29.	166	Albert Winna,	do.	30	M.	3	Empire,	Wilkesbarre,	Leg fractured and bruised about body by a fall of pan-shaped rock.
	30.	167	John Dickinson,	Miner,	40	S.		Baltimore No. 2 shaft,	do.	Severely injured by a premature blast.
	31.	168	Moses Jones,	Laborer,	31	M.	2	Stanton,	do.	Face and hands severely burned by an explosion of gas. While on the way in to work in company with John R. Davis and Thomas Malia, they unexpectedly entered a body of fire-damp which in some manner ignited from their safety lamps, causing an explosion. The latter two were fatally burned (see report).

TABLE V—*Recapitulation of Non-Fatal Accidents.*

OCCUPATION.	Number.	Per cent.	Nationality.	Number.	Per cent.	Causes of Accidents.	Number.	Per cent.
Miner	52	31	Welsh	49	29.1	By explosions of CH gas	41	24.4
Laborer	57	33.9	Irish	26	15.5	By falls of roof and coal	54	32.1
Drivers and runners	27	16	Polish	48	28.6	By falling down shafts	2	1.3
Masons and timbermen	11	6.5	American	17	10.1	By mine cars under ground	35	20.8
Superintendents and foremen	3	1.8	German	10	6	By explosions of powder and premature blasts	13	7.7
Rockmen	2	1.3	English	8	4.7	By miscellaneous causes under ground	10	6
Door tenders	5	2.9	Hungarian	6	3.6	By miscellaneous causes on surface	13	7.7
Headmen and footmen	4	2.4	Scotch	1	0.6			
Slate pickers	4	2.4	Canadian	1	0.6			
Outside workmen	3	1.8	Swede	1	0.6			
			Dane	1	0.6			
	168	100	Total	168	100	Total	168	100

FIFTH ANTHRACITE DISTRICT.

(CARBON COUNTY AND THAT PART OF LUZERNE LYING SOUTH OF THE WYOMING COAL FIELD.)

OFFICE OF INSPECTOR OF MINES,
HAZLETON, PA.

Hon. THOMAS J. STEWART, *Secretary of Internal Affairs:*

SIR: I have the honor of herewith presenting my annual report as Inspector of coal mines for the Fifth district of the anthracite coal fields for the year 1891.

The production of coal for the year was 5,803,964.07 tons, being an increase of 27,264.19 tons over the year 1890.

The number of lives lost this year was 53, leaving 25 widows and 64 orphans to mourn the loss of husband and father. The lives lost in the Jeanesville disaster, and the 6 widows and 21 orphaned children are included in this number, which I am sorry to say is an increase of one in the loss of life, one in the number of widows and of twelve in the number of orphans over 1890.

The number of non-fatal accidents during the year was 115, being an decrease of 19 from the number of like accidents for the year 1890.

The report contains besides the usual tables, a copy of the evidence taken at the inquest into the Jeanesville disaster, a report of arbitration had during the year, a brief description of the Jeddo tunnel and some references to colliery improvements.

By reference to the tables it will be seen that there was 109,509 tons of coal mined for each life lost, that there was a non-fatal accident for every 50,469 tons of coal mined and a fatal or non-fatal accident for every 34,547 tons of coal mined.

The tables also show that a life was lost for every 282.3 persons employed, a non-fatality for every 130.1 persons employed, and a fatality or non-fatality for every 89 persons employed.

Very respectfully yours,

JOHN M. LEWIS,
Inspector of Mines.

TOTAL QUANTITY OF COAL MINED DURING THE YEAR 1891.

A. Pardee & Co.,	613,359.05
Coxe Brothers & Co.,	1,404,201.09
Lehigh Coal and Navigation Company,	620,808.09
G. B. Markle & Co.,	445,723.03
Linderman & Skeer,	440,481.00
Upper Lehigh Coal Company,	388,864.07
J. C. Haydon & Co.,	305,365.11
Pardee Brothers & Co.,	237,041.08
Calvin Pardee & Co.,	144,662.16
Pardee Sons & Co.,	89,437.19
C. M. Dodson & Co.,	214,992.17
A. S. Van Wickle,	226,828.00
George H. Myers & Co.,	141,751.04
M. S. Kemmerer & Co.,	139,984.12
W. T. Carter & Co.,	131,448.00
Lehigh and Wilkesbarre Coal Company,	111,963.15
John S. Wentz & Co.,	96,085.18
Evans Mining Company,	50,964.14
Total tonnage,	5,803,964 07

NUMBER OF FATAL ACCIDENTS AND TONS OF COAL PRODUCED PER LIFE LOST.

NAMES OF THE OPERATORS.	Number of lives lost.	Tons of coal produced per life lost.
A. Pardee & Co.,	2	306,678+
Coxe Brothers & Co.,	9	156,023
Lehigh Coal and Navigation Company,	8	77,601
G. B. Markle & Co.,	3	148,574
Linderman & Skeer,	4	110,120
Upper Lehigh Coal Company,	4	97,216
J. C. Haydon & Co.,	14	21,812
Pardee Brothers & Co.,	1	237,041
C. Pardee & Co.,	None.	
Pardee Sons & Co.,	1	89,438
C. M. Dodson & Co.,	1	214,992
A. S. Van Wickle,	3	75,609
G. H. Myers & Co.,	1	141,751
M. S. Kemmerer & Co.,	1	139,984
W. T. Carter & Co.,	None.	
Lehigh and Wilkesbarre Coal Company,	None.	
J. S. Wentz & Co.,	None.	
Evans Mining Co.,	1	50,964
Total for all companies.	53	109,509

NUMBER OF NON-FATAL ACCIDENTS AND TONS OF COAL PRODUCED PER PERSON INJURED.

NAMES OF THE OPERATORS.	Number of persons injured.	Tons of coal produced per person injured.
A. Pardee & Co.,	27	22,717
Coxe Bros. & Co.,	21	66,867
Lehigh Coal and Navigation Company,	3	206,939
G. B. Markle & Co.,	15	29,715
Linderman & Skeer,	13	33,883
Upper Lehigh Coal Company,	7	55,552
J. C. Haydon & Co.,	8	38,171
Pardee Bros. & Co.,	1	237,041
C. Pardee & Co.,	7	20,666
Pardee Sons & Co.,	3	29,812
C. M. Dodson & Co.,	3	71,664
A. S. Van Wickle,	3	75,619
G. H. Myers & Co.,	3	47,250
M. S. Kemmerer & Co.,	1	139,984
W. T. Carter & Co.,	None.	
Lehigh and Wilkesbarre Coal Company,	None.	
J. S. Wentz & Co.,	None.	
Evans Mining Company,	None.	
Total for all the operators,	115	50,469

NUMBER OF FATAL AND NON-FATAL ACCIDENTS AND TONS OF COAL PRODUCED PER PERSON KILLED OR INJURED.

NAMES OF THE OPERATORS.	Number of persons killed or injured.	Tons of coal mined per person killed or injured.
A. Pardee & Co.,	29	21,150
Coxe Bros. & Co.,	30	46,807
Lehigh Coal and Navigation Company,	11	56,437
G. B. Markle & Co.,	18	24,762
Linderman & Skeer,	17	25,911
Upper Lehigh Coal Company,	11	35,351
J. C. Haydon & Co.,	22	13,880
Pardee Bros. & Co.,	2	118,520
Calvin Pardee & Co.,	7	20,666
Pardee Sons & Co.,	4	22,359
C. M. Dodson & Co.,	4	53,748
A. S. Van Wickle,	6	37,805
George H. Myers & Co.,	4	35,438
M. S. Kemmerer & Co.,	2	69,992
W. T. Carter & Co.,	None.	
Lehigh and Wilkesbarre Coal Company,	None.	
John S. Wentz & Co.,	None.	
Evans Mining Company,	1	50,964
Total for all the operators,	168	34,547

COMPARATIVE STATEMENT *showing the number of tons of coal produced per fatal accident: number of persons employed per life lost, and number of fatalities per thousand employes, for the past ten years.*

YEARS.	Production of coal in tons for each year.	Number of fatal accidents.	Tons of coal produced per fatal accident.	Number of persons employed.	Number employed per life lost.	Number of deaths per thousand persons employed.
1882,	5,360,497	40	134,012	12,298	307.45	3.252
1883,	5,666,767	38	149,125	13,598	357.84	2.794
1884,	5,274,227	40	131,885	14,299	357.47	2.797
1885,	5,535,544	42	131,798	14,224	338.66	2.952
1886,	5,333,518	35	152,386	14,140	404	2.475
1887,	3,961,594	15	264,106	14,096	939.73	1.064
1888,	4,892,514	32	152,891	14,448	451.50	2.215
1889,	5,655,196	46	122,939	14,686	319.26	3.200
1890,	5,776,699	52	111,090	14,421	277.33	3.606
1891,	5,803,964	53	109,509	14,961	282.28	3.548
Totals,	53,260,520	393	135,548	141,171	359.21	2.784

TABLE OF COMPARISON *showing number and different causes of fatal accidents in the Fifth District during the past ten years.*

CAUSES OF ACCIDENTS.	YEARS.										
	1882.	1883.	1884.	1885.	1886	1887.	1888.	1889	1890.	1891.	Total.
By water from old workings,										9	9
Asphyxiated by gases,										6	6
By explosions of gas,	1			1	1	1		1	1		6
By falls of coal, roof and sides,	24	18	10	19	13	6	14	22	19	16	161
By cars inside and on the surface,	8	11	17	8	5	3	6	11	19	6	94
By blasts and powder explosions,	1	1	3	3	2	2	4	4	1	4	25
By machinery inside and on the surface,	1	2	2	3	1	2	2			1	10
By boiler explosions,				3	1	1		4			
By miscellaneous causes inside and on the surface,	5	6	8	5	12	1	6	4	5	6	58
Totals,	40	38	40	42	35	15	32	46	52	53	393

CLASSIFICATION OF FATAL AND NON-FATAL ACCIDENTS.

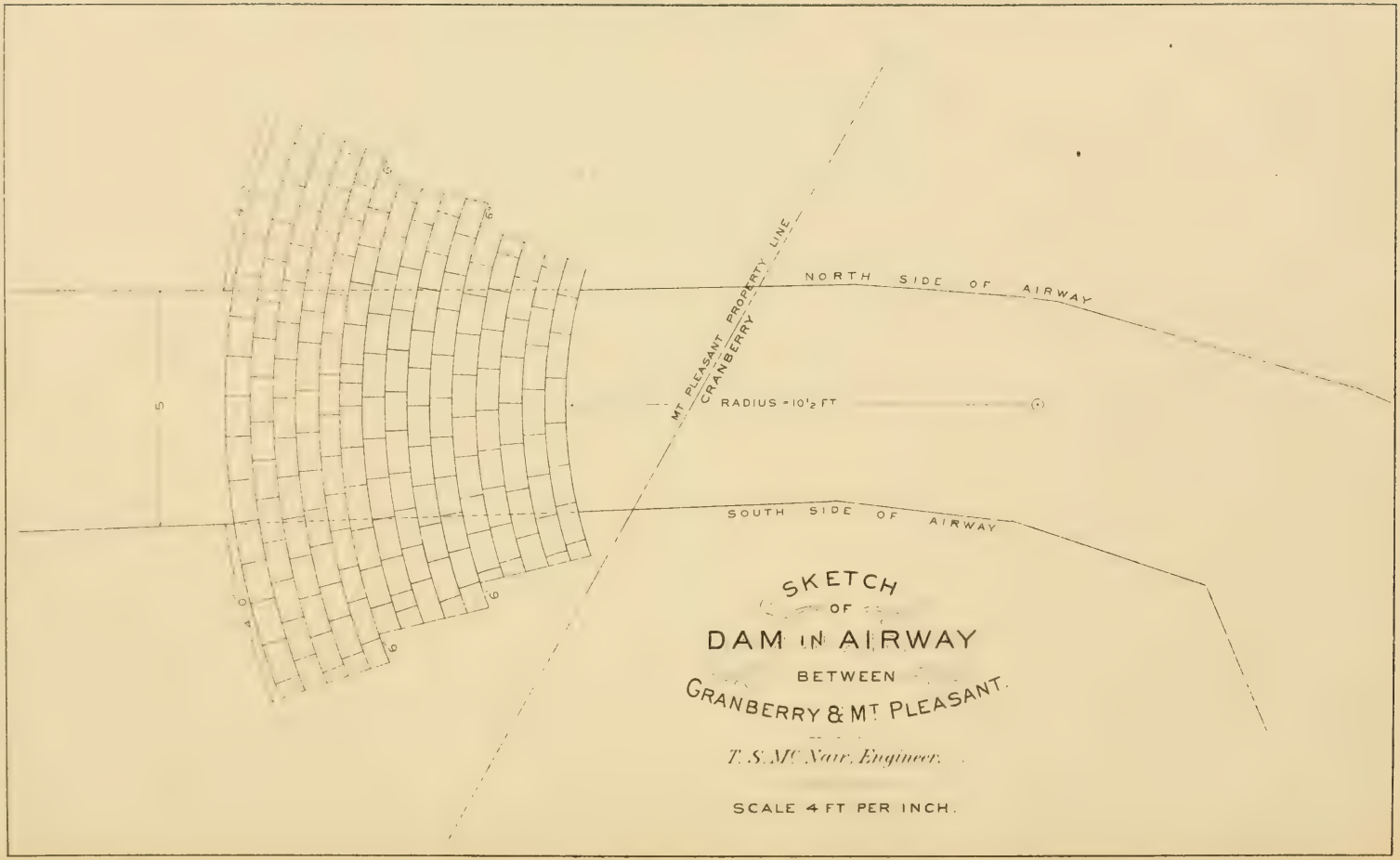
CAUSES OF ACCIDENTS.	Killed.	Injured.	Total.
By falls of coal, roof and sides,	14	32	46
By water breaking in from old workings,	9		9
By explosions of gas,		11	11
By explosions of powder,	4	11	15
By explosions of boilers,	1	1	2
Asphyxiated by gases,	6		6
By cars inside and on the surface,	6	24	30
By flying coal and rock from blasts and wrecks,		10	10
By falling down slopes and manways,	1	4	5
By falls of coal or clay on strippings,	2	4	6
By machinery inside and on surface,	5		5
By miscellaneous causes inside and on surface,	5	18	23
Total from all causes,	53	115	168

NATIONALITY OF PERSONS FATALLY AND NON-FATALLY INJURED.

NATURE OF ACCIDENT.	Hungarian.	Irish.	Polish.	American.	English.	Welsh.	Scotch.	German.	Austrian.	Italian.	Totals.
Fatal accidents	15	13	9	7	3	2	1	1	1	1	53
Non-fatal accidents,	36	23	12	19	4	5	1	9	2	4	115
Total,	51	36	21	26	7	7	2	10	3	5	168

TABLE *showing number of days worked by the collieries, number of persons employed, tons of coal mined per employe, tons of coal mined per persons injured and killed, number of fatalities, number injured, tons of coal mined per person injured, tons of coal mined per persons killed, ratio of employes to fatalities, tons of coal mined during 1891, number of kegs of powder used in mining, and number of pounds of dynamite used at the collieries of the Fifth District during year 1891.*

NAMES OF OPERATORS.	Number of days worked at colliery.	Number of persons employed by each company.	Number of tons of coal mined per employe	Tons of coal mined per person killed or injured.	Number of persons killed.	Number of persons injured.	Tons of coal mined per person killed.	Tons of coal mined per person injured.	Ratio of employes to each fatality.	Number of tons of coal mined during the year 1891.	Number of kegs of powder used at the collieries.	Number of pounds of dynamite used at the collieries.
A. Pardee & Co.	239.1	1,785	344	21,150	2	27	306,678	22,717	891.5	613,359.05	12,946	72,350
Coxe Brothers & Co	281.3	2,930	479.05	46,807	9	21	156,023	66,867	325.5	1,404,201.09	24,667	39,086
Lehigh Coal and Navigation Company	228.5	1,782	348.08	56,437	8	5	77,601	206,939	222.7	620,808.09	5,580	34,950
G. B. Markle & Co	220.5	1,146	389	24,762	3	15	148,574	29,715	382	445,723.05	8,282	33,906
Linderman & Skeer	222.5	1,174	375.04	25,911	4	13	110,120	33,883	293.5	440,481	9,946	47,769
Upper Lehigh Coal Company	233.3	660	589.04	35,351	4	7	97,216	55,552	165	388,864.07	8,271	4,797
J. C. Haydon & Co.	219.5	819	372.16	13,580	14	8	21,812	38,171	58.5	305,365.11	4,080	33,344
Pardee Brothers & Co.	235.6	865	274.01	118,520	1	1	237,041	237,041	865	237,041.08	1,640	43,700
Calvin Pardee & Co.	230	409	355.14	20,666	. . . .	7	No fatality.	20,666	. . . .	141,662.16	3,670	44,900
Pardee Sons & Co.	240.2	451	198.06	22,359	1	3	89,438	29,812	451	89,437.19	1,745	2,762
C. M. Dodson & Co.	224	449	478.17	53,748	1	3	214,992	71,664	449	214,992.17	4,595	311
A. S. Van Wickle	226.6	650	349	37,805	3	3	75,609	75,619	216.6	226,828	3,752	2,350
George H. Myers & Co.	245.4	357	376	35,438	1	3	141,751	47,250	377	141,751.04	1,638	5,600
M. S. Kemmerer & Co.	243.8	363	385.13	69,992	1	1	139,984	139,984	363	139,984.12	2,525	2,100
W. T. Carter & Co.	274	346	379.18	No accident.	. . . .	. . . .	No fatality.	. . . .	. . . .	131,448	2,040	1,850
Lehigh and Wilkesbarre Coal Company	233.7	267	419.07	No accident.	. . . .	. . . .	No fatality.	. . . .	. . . .	111,963.15	2,088	16,919
John S. Wentz & Co.	225	320	300.05	No accident.	. . . .	. . . .	No fatality.	. . . .	. . . .	96,085.18	1,266	. . . .
Evans Mining Company	271.7	170	299.16	50,964	1	. . . .	50,964	. . . .	170	50,964.14	1,977	2,000
Totals and averages	237.1	14,961	387.19	34,547	53	115	109,509	50,469	282.3	5,803,964.07	100,768	378,694


NORTH SIDE OF AIRWAY
MT PLEASANT PROPERTY LINE
CRANBERRY
RADIUS = 10½ FT
SOUTH SIDE OF AIRWAY
SKETCH
OF
DAM IN AIRWAY
BETWEEN
CRANBERRY & MT PLEASANT.
T. S. McNair, Engineer.
SCALE 4 FT PER INCH.

ARBITRATION.

Having received official notice from Pardee Sons & Co. of their intention to forthwith abandon all the mines at the Mt. Pleasant colliery on the 14th of August, 1891, and knowing there was a connection made between the No. 5. slope working of this colliery in the Wharton vein with the workings of the Cranberry colliery workings of A. Pardee & Co., and having great concern for the safety of the workmen of Cranberry colliery, it was suggested by Frank Pardee, Esq., general superintendent of A. Pardee & Co., at an interview we had, to submit the question of the safety of the dam which had been built in the connecting airway between these two collieries, and the safety of the adjacent pillar to arbitration, to which suggestion I heartily agreed, and Mr. Pardee named T. D. Jones to represent A. Pardee & Co., the Inspector named James E. Roderick to represent him, and the two arbitrators named L. O. Emmerich as the third arbitrator. The accompanying sketch shows the boundary pillar and a section through the same.

The arbitrators reported as follows:

HAZLETON, PA., *August 31, 1891.*

DEAR SIR: The arbitrators selected to decide the question of the future safety under a known pressure of water of a dam and the pillar in its immediate vicinity, the dam being in the Wharton vein, barrier pillar between A. Pardee & Co.'s Cranberry colliery and Messrs. Pardee Sons & Co.'s Mt. Pleasant colliery, met at Hazleton on August 24, 1891. They decided to go to Mt. Pleasant and try to personally inspect the condition of the dam and pillar. Arriving there, Mr. Joseph Dixon, general inside superintendent, was called and testified to them that the approaches to the dam on both sides of the pillar were closed by the falling of the roof, due to the robbing of the breast pillars. The board then adjourned and met again on August 27th, at Hazleton, at the office of the inspector. At the request of the board the following named persons were present: General Superintendent Frank Pardee, Mine Foremen Benjamin Reese, Simon Rube, General Inside Superintendent Joseph Dixon, of Pardee Sons & Co., and George C. Fishburne, a former mine foreman at Mt. Pleasant.

Mr. Benjamin Reese testified that he had charge of the cutting of the hitches for the dam in the coal and rock, being at that time mine foreman at Cranberry colliery. Cut the hitches to a templet made according to the plans furnished him. Identified sketch presented by Mr. Pardee as being the plan used. In cutting the hitches in the top had cut through the top clod to the solid rock. Thought the map of mine in vicinity of dam correct. The breast adjacent to the pillar near the dam on the Cranberry side was not driven any further than shown on the map. Thought dam and pillar safe.

Mr. Simon Bube, mason, testified: Did the mason work in the construction of the dam. Did not know what brand of cement was used. Made the mortar of equal parts of sand and cement. It set very quickly.

Keyed the top of dam very thoroughly and was sure it would never yield. Identified sketch presented by Mr. Pardee as plan of dam. Bricks were hard burned.

Mr. Frank Pardee testified: Am superintendent for A. Pardee & Co. The sketch presented to the board with the instructions attached was the one used in the construction of the dam. For some reason miners could not follow that part of the instructions bearing on the location of dam. A templet was therefore used. Dam was constructed according to sketch, excepting that, for greater security, he had the first wall made three feet thick instead of two and one-half feet, as shown on sketch. There would be a maximum pressure of 149 feet of water on dam after the Mt. Pleasant workings were filled. About one and a half years ago, just previous to the robbing of that portion of the Cranberry mine, he had visited this point and examined the dam, and found it in good condition. Thought it had been built a year at that time. When the dam was built the roof had already fallen on the Mt. Pleasant side. He thought that was favorable to the preservation of the dam. The coal in the barrier pillar was hard and strong, not at all slippy. The pitch of vein is about 21° at the dam. His inside superintendent had informed him that the dam could be reached only by opening a new gangway. He had intended to leave a pillar sufficiently strong to meet all emergencies. Designed dam to be as safe as possible, and believed it to be so.

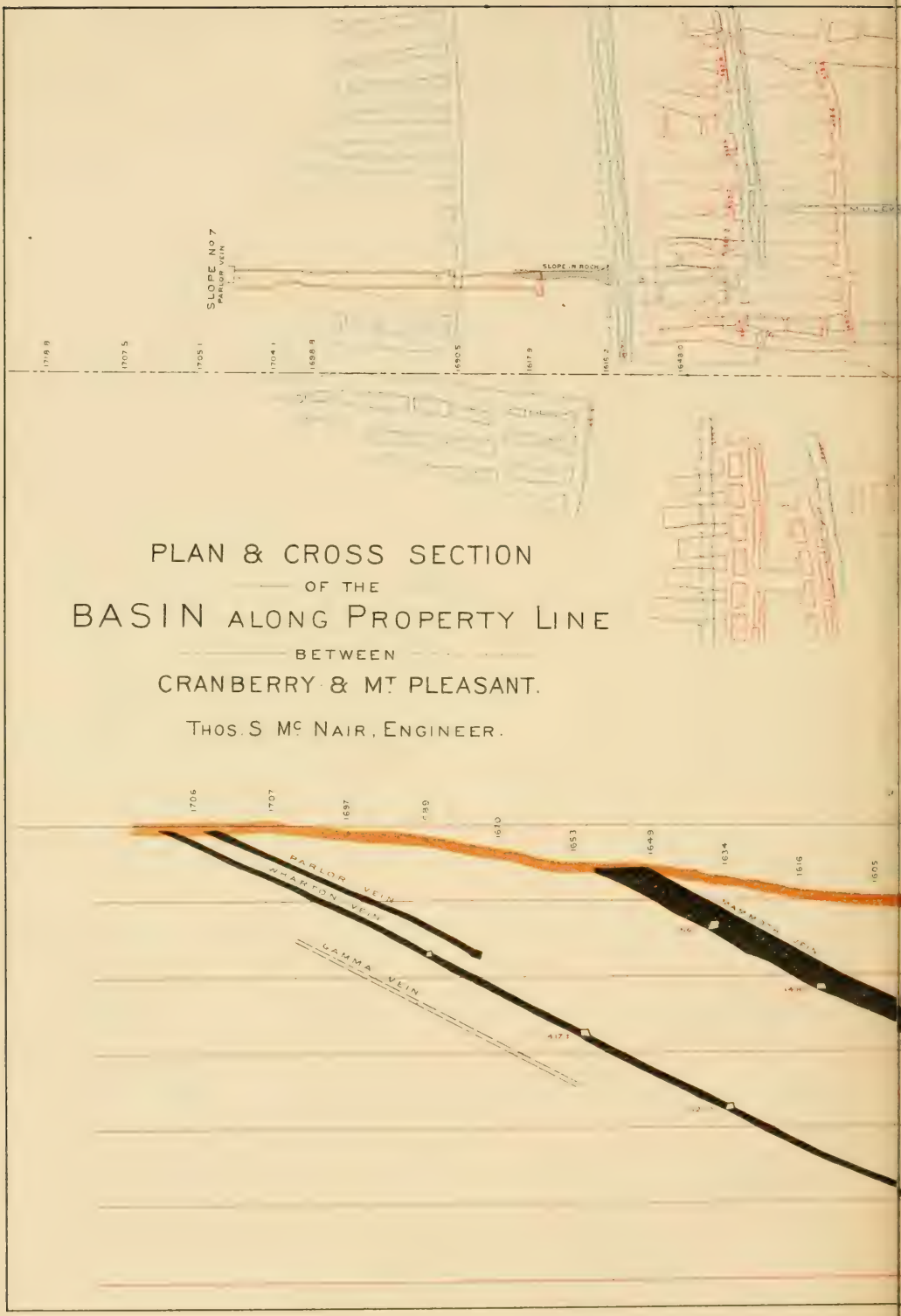
Mr. Sharon McNair testified: Am mining engineer; made the surveys to locate the dam. At that time the pillar had been exposed for ten (10) years, and showed no signs of "clipping off." Survey to the dam was made November 17, 1890. The following is a section of the Wharton vein in the vicinity of the dam:

Top coal,	2′	11′
Slate,	0′	3′
Bottom coal,	2′	4′
Total thickness of vein,	5′	6′

After the testimony and the maps of both colleries had been carefully examined by the board, and found to fully agree, the arbitrators unanimously agreed and rendered as their decision:

That as the pillar and dam and the condition of the mine in their vicinity are not open to inspection, we can only give a decision based on the testimony of the witnesses; and that relying on their known trustworthiness and their known competency in their several vocations, we feel safe in deciding that the pillar in its vicinity will withstand the maximum pressure that will come upon it.

JAMES E. RODERICK,
Arbitrator selected by Inspector of mines.
T. D. JONES,
Arbitrator selected by A. Pardee & Co.
L. O. EMMERICH,
Arbitrator selected by the other two.



PLAN & CROSS SECTION
OF THE
BASIN ALONG PROPERTY LINE
BETWEEN
CRANBERRY & Mt PLEASANT.

THOS. S Mc NAIR, ENGINEER.

SCHOOL SITE
SLOPE No 1
MAMMOTH VEIN
Mt PLEASANT
CRANBERRY
DAM
CREEK
1603
1613
1619
1628
1642
1661
1671
1686
1691
1702
1700
1600
1500
1400
1300
1200
1100
1467.8
1435.0
498.5
325
1163.2

DESCRIPTION OF THE JEDDO TUNNEL.

The Jeddo Tunnel Company, Limited, was incorporated November, 1890, and is composed of John Markle, president; W. H. Smith, Jr., secretary and treasurer, and Messrs. E. P. Wilbur, Wm. Lilly, John Markle, Alvin Markle and W. H. Smith, Jr., managers.

The object of this company is the construction and maintenance of a tunnel for drainage purposes, from the Little Nescopeck creek in Butler Valley, Luzerne county, Pa., via Ebervale, Pa., to Jeddo, Pa. Total length of said tunnel about five miles.

The tunnel from Butler Valley to Ebervale is to be eight feet wide and eight feet high, and is known as tunnel A, its length will be over three miles, and altogether this is certainly one of the greatest tunnels ever projected in mining engineering in the coal regions of Pennsylvania. The contract was awarded to Charles F. King & Co., and they began operations in March, 1891.

From Butler Valley, including the open cut, there has been driven during the year 1891, 1,433 feet. A slope was sunk on the Buck mountain vein at Ebervale to level of tunnel line, said slope was completed during 1891, and the length of same is 1,324 feet.

A slope at Lattimer to be sunk on the Buck mountain vein was begun and was driven 416 feet during 1891. When the Lattimer slope is completed there will be five headings driving at the same time on the tunnel, one from Butler Valley, two from the Lattimer slope and two from the Ebervale slope.

COLLIERY IMPROVEMENTS MADE DURING THE YEAR 1891 IN THE FIFTH DISTRICT.

A. Pardee & Co.

Hazleton Mine.—At this colliery a new fan has been erected to ventilate the workings of the Wharton vein in No. 8 slope. It is an exhaust fan 16 feet in diameter. Two Hazleton boilers of 215 horse power each have been added to the steam producing plant of this colliery.

Laurel Hill.—At this colliery an additional boiler (Hazleton) 215 horse power has been erected during the year.

Cranberry.—At the breaker there has been added to the steam plant of this colliery one Hazleton boiler of 215 horse power.

At No. 4 slope an exhaust fan 16 feet in diameter has been placed in position this year to ventilate the workings in the Wharton vein.

Lehigh Coal and Navigation Company.

Colliery No. 1, Nesquehoning.—At this colliery a new stone stable has been built, providing accommodations for fifty mules. At tunnel No. 1 an exhaust fan fifteen feet in diameter has been erected to ventilate the workings of this tunnel on the south dip of the Mammoth vein east of

the tunnel. At shaft have made a balance shaft 240 feet deep to bring the coal from the old Hacklebarney workings to the shaft gangway. A pump 36 by 20 by 72 feet has been placed in position at the shaft, and on the surface six cylinder boilers 36 inches in diameter and 30 feet long have been added to the steam plant.

Colliery No. 4, Summit Hill.—At this colliery a 36 by 20 by 72 inch pump was placed on the lower lift and a 38 by 16 by 48 inch pump was placed at the middle lift. The steam plant has been greatly improved by the addition of a battery of the Babcock and Wilcox boilers of 208 horse power.

Screen Building, Hanto.—The south side of the screen building has been renewed during the past year and some improvements made in the machinery for cleaning and sizing the coal prepared here.

Colliery No. 9, Lansford.—At Spring tunnel a gravity plane 144 feet long has been made to lower the coal to the slope gangway level.

G. B. Markle & Co.

Jeddo No. 5.—At this new colliery the foundations for a new double breaker are laid, while the foundations for a boiler house 84 by 66½ feet are being finished. For this slope a pair of direct acting engines with cylinders 26 inches in diameter and 48 inch stroke have been placed in position. The drum used is 10 feet in diameter. The engine house over this machinery is of wooden frame with corrugated iron roof and sides. The trial slope mentioned in last year's report is now completed, length of same is 865 feet, and from this bottom a tunnel 9 feet wide by 8 feet high was started in December of this year.

A dam has been constructed in the old Pink Ash workings near No. 5 main slope to hold the water in the Pink Ash old workings. Said dam is carefully constructed of brick and cement; dimensions of dam are, height 19½ feet, width 25 feet, thickness of wall 6 feet, and it is built as an arc of a circle of 18.12 feet radius.

The mouth of No. 5 main slope has been arched with brick through the wash to the coal, thus doing away with any timber on the slope. This slope is partly completed, size is, width 16 feet, height, 8 feet.

Highland No. 2, Tunnel C.—This tunnel driven from first lift toward the Wharton vein, mention of which is made in last year's report, was completed this year. Length of tunnel 420 feet, width 14 feet, height 8 feet. A wash house has been erected for the convenience of the workmen at this colliery.

Highland No. 3.—A slope 107 feet long has been sunk in the Mammoth vein, and turnouts and sump are completed. For this slope a pair of 14 by 18 inch hoisting engines have been placed in position, and a locomotive boiler set up. Engine and boiler houses have been erected, and a supply of fresh water is obtained by laying a two-inch

pipe line through the old village of Highland to the pipe line from boiler house.

Linderman & Skeer.

East Sugar Loaf No. 2.—At this colliery the new slope mentioned in last year's report has been completed to the fourth lift in the Wharton vein and will be used as the hoisting slope from all the veins to the new breaker erected during this year. The slope has been graded and laid with 58 pound T rails. An underground slope has been sunk in the Wharton vein from the fourth to the fifth lifts. The engines for this slope are to be placed on the surface while the ropes for operating them are passed through two bore-holes six inches in diameter, which have been drilled during the past year. To supply steam for the pumps in this slope a bore-hole twelve inches in diameter was also put down from the surface to the fourth lift. The new breaker at this colliery is a very substantial wooden structure. It is 90 feet high and contains nine screens and six sets of jigs, and no coal is elevated a second time except the bone coal which is prepared by rebreaking for the fire room. The building is well lighted and will be heated by steam, and with the six sets of rolls and the arrangement of screens and jigs with coal that could be called clean would have a capacity of 2,000 tons daily, and will show with the coal unmixed almost with any Mammoth vein coal a production of 1,500 tons daily.

At slopes Nos. 1, 2, 4, 5 and 6, tunnels have been driven to the Primrose vein with an average length of 204 feet each. These tunnels will open up a large area of coal in the Primrose vein which is found here in very fair condition.

East Sugar Loaf No. 4.—At this slope, besides the above mentioned tunnel, three new boilers were placed in position.

A new feed pump and heating tank were added to the machinery at No. 6 slope.

Upper Lehigh Coal Company.

No. 2 Colliery.—At this colliery a new building has been erected and provided with two sets of rolls and screen, also a set of conveyors and elevators, all of which machinery is used for the rebreaking of and sizing of the bone coal from the breakers and from the culm piles of past years for use in the furnaces of the boiler houses.

A shaft has been sunk south of slope No. 2, 160 feet deep, cutting three overlying seams of coal, and trial gangways have been driven in each vein.

No. 4 Slope.—At this colliery the company is trying to work a three foot seam of coal, and have an air compressor and several air or power drills in use. They also run the engine by compressed air.

No. 5 Slope.—A new stripping has been opened at this point and the company expect to remove 100,000 cubic yards of surface from the coal.

A new line of column pipe 1,730 feet in length has been placed in this slope, and a 14-inch plunger pump formerly used at the upper lift has been placed at the lower lift.

No. 8 Slope.—This new slope, which is located at the eastern end of the property, has been opened to the basin in the Buck mountain vein, and gangways driven 800 feet east and 530 feet west during the year past. A pair of double hoisting engines with friction drum have been set up here, and four cylinder boilers 36 inches in diameter and 36 feet long have been placed in position and connected with a 50-foot iron smoke stack. An exhaust fan has been erected and all the machinery is substantially housed. A duplex pump has been put at the foot of slope, having steam cylinders 26 by 48 inches with 12 by 48 inch plungers and provided with suitable steam and column pipe.

This company during the past year has spent considerable money in digging ditches and channels to conduct surface water so as to prevent its going down the cave holes on the outcrop and having to be pumped out of the mine at one slope, with the result of, perhaps, the larger part it returning to the sump of the next slope, and their work covers more than two milesof such channels and ditches and represents money saved to the company.

C. M. Dodson & Co., Beaver Brook colliery.—This company has added two forty horse power, Dimmick & Smith boilers to its steam plant, besides lengthening out another set of boilers from 36 to 42 feet and adding "mud dams."

No. 11 slope has been opened up about 300 feet on the north pitch of the north basin, but has not yet reached the basin. The total depth from the top of slope is 378 feet, with an average pitch of 60°. To avoid all danger from water in the overflowing Wharton vein workings, the company has wisely decided to pump the water out before sinking this Buck mountain slope any farther.

George H. Myers & Co., Yorktown.—At the No. 1 slope of this colliery a shaft has been sunk inside from the Mammoth vein to the Buck mountain vein, a depth of 278 feet 7 inches. It cuts the Wharton vein at a distance of 116 feet from the bottom of Mammoth vein to bottom of Wharton vein. The Wharton vein is found 9 feet thick and the Buck mountain vein 10 feet thick. The shaft is provided with safety gates at the Mammoth and Wharton veins which are well arranged. The hosting engines are placed on the surface and the rope passes down through a six-inch bore-hole drilled for the purpose.

M. S. Kemmerer & Co., Sandy Run.—At this colliery a tunnel 120 feet long was driven through the rock to the workings of No. 1 slope, to drain a portion of those workings, and to cut off 90 feet of the lift of the pumps in the slope.

No. 11 slope has been opened from the first lift to the basin, a depth of 450 feet from the surface, to get back of the squeeze in old No. 4 workings.

EXAMINATION OF APPLICANTS FOR CERTIFICATES OF QUALIFICATION AS MINE FOREMEN.

The examination of applicants for certificates of qualification was held this year in the Pine street public school building of Hazleton, the use of which was granted the board of examiners by the board of school directors of the borough. The board of examiners consisted of J. M. Lewis, inspector; Hon. Eckley B. Coxe, Drifton, coal operator, and John W. Scott, miner, Hazleton. The following named persons were recommended for certificates of qualification by the board to the Secretary of Internal Affairs, according to the provisions of the new mine law of 1891.

Stephen Cairns, ... Sandy Run.
George Meneeley, ... Sandy Run.
James Lawson, ... Freeland.
Tobias Seiwell, ... Oneida.
Isaac M. Davies, ... Lansford.

Besides these five, owing to the new law, the board recommended ninety-four foremen for certificates under the new law who were holders of certificates of service and qualification under the law of 1885. And by the new law and in compliance therewith the board recommended one hundred and eighteen persons for certificates as assistant mine foremen.

MINE FIRE AT COLLIERY NO. 4 OF LEHIGH COAL AND NAVIGATION COMPANY, LANSFORD.

At the dinner hour on May 8, 1891, the timber in steam pipe way to the lower lift pumps was discovered to be on fire. The alarm was sounded and the men were notified to come out and men were put to work to brattice off the air from below while the mouth of the hole was left open so that the fire might not be forced down into the workings. The fire soon spread to the airway and pumpway, and clay dams were built on the middle lift and water level gangways to prevent the fire from spreading eastward. East of the fire there is a pillar of coal solid except at the gangways which had been abandoned and allowed to close at the water level and middle lifts.

The pumps were stopped by the breaking of the steam pipe and the water in the lower gangway rose to the roof and prevented the spreading of the fire on that level.

A pump and temporary line of pipe were soon placed to throw water from No. 5 reservoir to the top of the steam pipe hole. The water cars were soon put on the slope and brought water from the lower to the middle lift from where the pumps on this lift forced it to the water level where it was turned into the airway, which like the steam pipe hole is parallel to the slope on a pitch of seventy degrees, and down both these passages the water was turned and together with the water, ashes from

the ash heap of the boilers was turned into the airway, while down the steam pipe hole was sent coal dirt brought in cars from the screen building, 307 cars of six tons each of this dirt were sent down the steam pipe hole, while down the airway 12,600 cart loads of ashes were dumped. The dumping of dirt and ashes was stopped on May 15, as the holes were full to the water level and there was no indication of any more fire. The steam pipe hole, the airway and the pumpway were then cleaned out and retimbered. Work was resumed on October 20, after being idle five months and eleven days. Very great credit is due the officials in charge for the prompt action on their part, and the faithful work of the employes in this time of peril, doubtless saved the colliery from being damaged much more seriously.

At No. 6 colliery, work is still being pushed to confine the fire in the Mammoth vein workings, on the mountain above water level, and the dam at the east end of the fire, made in the summer of 1889, by washing 7,000 tons of coal dirt down a bore hole that passes through the Centennial tunnel, has been found to answer the purpose of its construction, as it holds the fire in check, and during the past year, 4,500 tons additional of coal dirt have been washed in between the dam and fire, thus confining the fire to a smaller area.

The fire has not advanced westward and the company has worked an open cut on that side and are taking out the coal thirty feet below the level of the west outcrop tunnel and are prepared to move on the fire from both sides, and will thus ultimately succeed in extinguishing one of the most stubborn of mine fires.

REMARKS ON FATALITIES OCCURRING DURING 1891.

In reviewing the fatalities of this year, I desire to be just to all parties in any way connected with these sad occurrences and shall endeavor to present the simple facts in the cases, and will use the numbers as they occur in table No. 4.

No. 1. Waldic Petschnezski, a Polish miner, 29 years old, was asphyxiated by fire damp or carburretted hydrogen gas on January 23, at the top of a breast where he had gone to rap to a party in a cross heading from the second level of the Wharton vein, in East Sugar Loaf No. 1. Deceased had been at the same point on the preceding day, and when he came on to work this day, on finding that the cross heading had not been holed into the top of this breast from the lower level, he started to go and rap again, and at his request the fire-boss was allowed to go with him. When they had reached nearly to the top of the breast, the fire-boss made an examination and told deceased it was not safe to go any farther. But he had been there the day before and he thought the gas would not harm him if he went up in the dark, and going up he was almost immediately overcome by the gas which was there, and although strong efforts were made by miner Charles McGuire, who fire-boss Park-

inson called to his assistance, he was not able to rescue the man from his danger, and the cross-heading had to be driven through and the gas drawn off from the top of the breast before the body was reached. The man entered the gas between four and five o'clock on the afternoon of Friday, January 23, and his dead body was taken out about half past one o'clock Saturday afternoon, and taken to his home in Ebervale, where a wife and two small children waited for his coming home.

(Nos. 2 to 14 inclusive will be treated of in the report of the Jeanesville disaster.)

No. 15. Irvin Heckler, an outside driver, American, age 16, was instantly killed at No. 2 breaker of the Upper Lehigh company on the 12th of February, by falling under the slate car. Deceased was employed in hauling the slate cars from under the breaker to the foot of a grade where a small locomotive pushed the car up the grade to the slate pile and brought it back to the bottom of grade again. It was not really necessary for him to unhitch his mule from the car while in motion, but he was in the act of doing so and must have slipped on a branch rail.

No. 21. John Cannon, miner, Irish, 35 years old, single, was fatally injured at the Evans' Colliery, by a fall of clod. Cannon and his partner when they went up their breast, which pitched about 22°, noticed on this Monday morning March 23, that the clod was drawn away from a slip in the roof and taking their drills they together tried to bar it down, and failing to bring it, decided it was safe, and without securing it with even a temporary prop, they both sat down under it and felt safe. McDevitt the partner had started a hole before they began to bar the clod and he went to the rib and began to drill his hole leaving Cannon sitting on a small chunk of coal under the clod, the partner had just begun to drill when without the slightest warning the clod fell injuring Cannon so seriously that he died in about four hours.

No. 24. Patrich Gaffney, conveyor tender, American, 14 years old, was killed by being crushed in the conveyors into which he in someway fell, and as no one saw the accident, and as the body was found where it had fallen free of the machinery, it was somewhat of a mystery how the fatality occurred and I notified deputy coroner, T. A. Buckley of Freeland, to hold an inquest which he did, taking the jury to view the scene of the accident, and after hearing all the evidence in the case the jury returned the following as their verdict, "That the said Patrick Gaffney came to his death in Foster township, Luzerne county, State of Pennsylvania, on the 21st day of April, A, D. 1891, by being caught in a coal conveyor at No. 2 Highland breaker, operated by G. B. Markle & Co., and that said death resulted through negligence on the part of the said G. B. Markle & Co. in not providing a proper railing along the said conveyor, which is in direct violation of article five, section five, of the mining laws of the anthracite coal districts of Pennsylvania and which reads as follows: ("All machinery used in or around the mines and collieries, and especi-

ally in breakers such as engines, rollers, wheels, screens, shafting and belting, shall be protected by covering or railing so as to prevent persons from inadvertently walking against or falling upon the same. The sides of stairs, trestles and dangerous plank walks in and around the collieries, shall be provided with hand and guard railing to prevent persons from falling over their sides.")

No. 28. Philip Imre, Hungarian, miner, 26 years old, was killed at Deringer colliery, by a fall of slate while barring coal out from under it. Deceased and his partner had driven their breast in the Wharton vein to the limit, and were loading out and as one man could easily load all the cars they each worked every other day. There was a point in their breast where the pitch changed and the coal was pinched down to between three and four feet in thickness and the loose coal in running down the breast sometimes blocked at this point. It seems that on May 21, Imre discovered that the coal was blocked at this point and taking a drill and hammer and wedge he went all alone, without notifying anyone, and began to break up the large blocks of coal, and while barring at one of them the slate under which it was caught gave way and slid down on him crushing his chest and dislocating his neck. Death must have been almost instantaneous. He was last seen alive between eleven and twelve o'clock in the morning, and the driver, supposing he had gone home, loaded two cars for him, and he was not missed until his wife notified his partner that he had not come home and he then went to the mine foreman, Mr. Daniel Sachs, who, taking assistance, went in and found the body at the place where the partner pointed out it would be if anything had happened to him. Had the partner been at work, this accident might not have had to be recorded.

No. 33, John Brogan, Irish, miner, aged 36 years, married, was instantly killed in his gangway in Pond Creek slope, on the 18th of July. Deceased was working as the miner in a gangway that was working three shifts, and the miner who had just finished his day's work told him to go right on and take down the clod, but Brogan fired a shot and then had to get the coal out of the face and stand a prop on the lower side of the road under the clod before he started to pull it down, and while engaged in shovelling the coal after his shot the clod fell on him; the vein was only five feet thick at this place and the clod had to be taken down for height for the car and mule and Brogan should have taken it down before doing anything else, and his death is the result of his want of judgment, and a widow and four orphan children mourn his untimely death.

No. 35. John Trevena, English, miner, age 33 years, was instantly killed by an explosion of dynamite in No. 1 tunnel, Nesquehoning, on July 30. Deceased was the miner in charge of the gangway and employed two laborers on this morning; having nearly finished a rock hole he left the laborers for the purpose of preparing a charge of powder for

the hole by the time they had it completed, and had not been away from them five minutes they think, when the explosion occurred, and the gangway was filled with flames of dynamite and black powder mixed, as the laborers say that half a keg of black powder was also fired from the explosion. The most probable theory of how the explosion happened is, that as the dynamite was only brought in that morning by the laborer it was quite hard yet and deceased, in making a hole for his fuse cap, did not get it quite deep enough, and in pushing the cap down may have twisted the fuse in the cap and the friction exploded the cap and caused the stick of powder held in his left hand to explode and the concussion cause the explosion of the rest of the dynamite and produced heat enough and a spark to set off the black powder. This theory seems to be the most reasonable as Trevena's left hand was blown off and the fingers of his right hand and thumb were lacerated. This is the first death from dynamite occurring in this district since I have been here, but it shows how necessary it is to keep on warning men to be careful in handling all kinds of explosives around the mines. A widow and four orphans were made to mourn their loss by this accident.

Nos. 45 and 46. Peter Hill, miner, 33 years old, married, and William Eberts, laborer, 24 years old, single, both Americans, were killed and fatally injured respectively by the premature explosion of dynamite while charging a rock hole with it in No. 6 colliery, Lansford. Peter Hill was the miner in charge of gangway, and Eberts and another man were laboring for him. The vein is between four and five feet thick on a pitch of about 45 degrees, and the gangway is driven nearly level on the side pitch and the bottom rock is blown out to make a level place for road-bed and head room for men and mules; the way that Hill worked was to cut out nearly twelve feet of the coal and then running in an eight or nine foot rock hole on the upper side of the gangway, loosen up all the rock with a heavy charge of dynamite and if possible break it small enough to handle at the same time. For this purpose he was in the habit of firing two or three sticks of the powder at the back of the hole to spring it or rifle it. They had fired their springing charge and were in the act of charging the hole with the final charge and while Joseph Publick, the other laborer, sat on the top of the rock and cut the paper off the powder, Eberts placed it in the hole and Hill shoved it back in with an iron scraper and when they had put twelve of the fifteen sticks of the charge in the hole, while Hill was tamping it back with the scraper, an explosion was produced and Hill was instantly killed while Eberts was thrown forty feet out the gangway on the side of the road and was so badly injured that he died two hours and a half after the accident. Publick was working his first day in the mines and had a miraculous escape from death and injury, and was only badly shaken up by the occurrence.

I think that if Hill had used a wood rod to tamp his powder with the

explosion would not have taken place and his wife and five little ones would not now be mourning their irreparable loss.

No. 49, John Kentos, Hungarian, slate picker, twenty-three years old, single, was fatally burned and injured by a boiler explosion at Jeddo No. 3 on the night of November 12. John had worked at the breaker until after 7 o'clock, and instead of going right home to Ebervale, a mile and more away, he went to the boiler house, two hundred yards west of the breaker, along his way, and went in to see Andrew Westa, the fireman in charge of the boilers which supply steam for the mine pumps. While engaged in conversation a boiler of the set in front of which John was sitting exploded, and a portion of the front was thrown on him, and he was burned and injured so severely that he died about three-quarters of an hour after the explosion. Andrew Westa, the fireman, was badly scalded by steam, and was taken to the State hospital, where with good care, he fully recovered. I notified T. A. Buckley, J. P., deputy coroner, to hold an inquest, which he did, and the jury rendered as their verdict: "That John Kentos came to his death by being struck by a piece of casting, caused by a boiler exploding, and that said death resulted through the negligence of the fireman, Andrew Westa, in allowing the water to get too low in the boilers."

THE JEANESVILLE DISASTER.

On the 4th day of February, 1891, there occurred one of the greatest disasters that ever happened in this district. No. 10 slope in the Wharton vein is opened up by a tunnel from No. 1 slope of the Spring Mountain Coal Company. No. 1 slope is sunk on the Mammoth vein from the surface, while No. 10 is a subterranean slope, from near the top of which another tunnel is driven into the Mammoth vein to a point from whence the gangway passes the second opening of the Mammoth vein near the large barn of the company.

The No. 10 slope is about 600 feet long and has a vertical depth of 158 feet where it reaches the basin, which rises westward very rapidly. On this basin gangway, breasts were driven on both pitches, and in breast No. 11, shown on both of the maps with this report, is where the water from No. 8 slope gangway was tapped by a miner, who had no idea of his danger, as will be seen from the evidence, which is given in full, as taken at the coroner's inquest held over the victims of the disaster. No. 8 gangway had been abandoned since the 1st of June, 1886, and the slope was allowed to fill up with water to the level of No. 7 slope gangway, where it ran to the pumps in that slope and was pumped out. Relying on the map, which showed a strong pillar for a vein four to five feet thick, the superintendent and mine foreman laid out No. 11 breast in No. 10 gangway, and let miners Patrick Coll and Charles Boyle drive it. On the 4th day of February the No. 8 gangway was broken into, and, while Coll and Boyle made their escape, Edward Gallagher, miner,

Patrick Kelly, laborer; James Ward, miner; Samuel Porter, laborer; Michael Polish, laborer; Bernard McCloskey, miner; James Griffiths, bottom man; Joseph Orsock, laborer, and Thomas Geke, laborer, were drowned by the flooding waters, and their bodies were recovered in the order in which their names occur here between February 18 and 23 inclusive.

As soon as I received notice of this disaster I went to Jeanesville, and with Engineer A. J. Womelsdorf, Superintendent David MacFarlane and Lehigh Valley Inspector Caleb Williams, went into the mines and on reaching the No. 10 slope, found the water within 18 feet vertical of the top of the slope or 140 feet vertical over the foot of slope, and more than 80 feet higher than the tops of any of breasts in the southeast gangway, and over 40 feet above the top of No. 5 breast on the northeast gangway where living men were found. Finding that everything possible was being done, and that two pumps had already begun to work on the flood, we came away and examined the maps, and after a careful look over them it was decided to place a pump in No. 7 slope and follow down on that side with the pump until it was ascertained that the water from No. 8 workings was no longer discharging into No. 10 workings, and so faithfully was the work prosecuted that two weeks from the day of the accident, the body of Edward Gallagher was recovered, and on Monday afternoon, February 23, by one o'clock, all the missing persons but four had been accounted for. As on Sunday the 22d, the bodies of Harry Ball, miner; Lawrence Reed, miner; James Balock, laborer, and Michael Smith, laborer, were discovered in breast No. 1 of the southeast gangway, and on examination of the breast, it was found that they had been closed in at the top of the breast, and for 18 feet from the high water mark in the breast their footprints were found in the mud, showing how they had followed and noted the receding of the waters. For some reason they had built a fire, and placing it in an iron powder keg, had put coal on it and by this act had consumed the life-sustaining oxygen from their compressed air, in which they were hermetically sealed as it were by the water, and then their lives went out with the fire and they were asphyxiated by carbonic oxide gas, as were even the rats which were found with them dead.

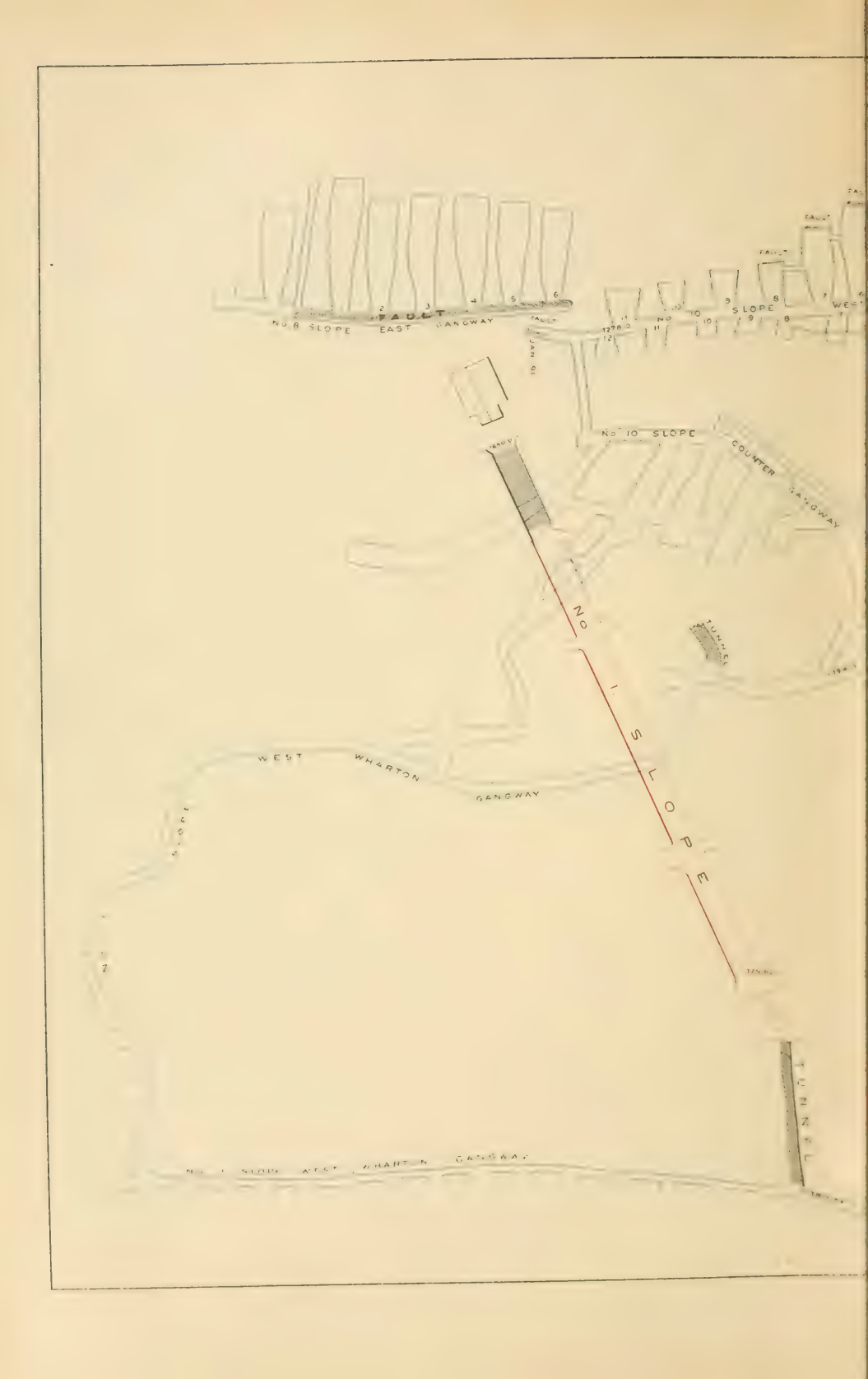
Finding that all the bodies that were supposed to be on the lower levels were recovered, and that the last four missing would be likely to be found in the pitch in one of the breasts we were in that afternoon, and finding black damp in the manway of No. 5 breast, a brattice was carried along the gangway from the pillar on the south side of the gangway before it branches into the two gangways, and the brattice was run to the pillar between breasts 5 and 6, and it being after five o'clock it was determined to go out and have supper and let the air work on the damp while we were gone. About seven o'clock mine foreman Kelshaw and Hale with James Sterling, Alexander Morton and James Neilson went

in as an exploring party, and started up the inside manway of No 5 breast, and after going to the first heading Foreman Kelshaw rapped on the manway and halloed, and then in the silence that followed what was his suprise and that of those with him to hear a weak faint voice halloo back, then indeed there was excitement in that mine, for word was passed out for a doctor, that one man had been found alive and it seemed as if everybody was endowed with new strength, and while Superintendent Macfarlane went to the top of the breast, some tried to get more air to to the upper heading and some were dispatched to the slope for bed quilts and blankets and to hurry the doctor in so as to give the men, who all four by this time were discovered to be alive, some proper nourishment and to advise about their removal from the mine.

Doctor Mears of Audenried who was visiting in Jeanesville came right into the mines and down the slope to the foot of the breast where the men were and advised getting them down as soon as possible and into better air, and this was the hardest part of all the rescue, for here were four men helpless as babes to be taken down a narrow space of less than three feet wide in many places and not more than two feet high in some places, but Edward Good, Alexander Morton and Duncan Macfarlane formed the human toboggan to carry this precious freight down this 45° pitch and they landed them all one at a time safely at the foot of the breast, from thence willing hands carried them to the slope where they were placed on a truck and hauled to the top of the slope and placed in improvised beds in the engine room, where the doctor thought best to keep them till the next day, and very early in the morning they were removed from the mines to the Sons of Temperance Hall where Mrs. J. C. Haydon took charge of them, and with the help of other ladies, and under the direction of Dr. Mears, did everything possible to nurse the men back to health, and in a few days three nurses were brought up from St. Luke's Hospital at Bethlehem who stayed and nursed them until they were out of danger.

The names of the four survivors of an imprisonment in compressed air for nineteen days and eight hours are as follows: Joseph Matuscowitz or "Big Joe," John Tomasuzsci, Wasil Frinko and John Barno, and as I am able to learn they have all recovered their health nearly if not altogether.

As this accident occurred in Carbon county, I notified the coroner, W. W. Buck, of Weatherly, that I wished an inquest held and he empanelled the following named persons a jury, viz: E. P. Williams of Weatherly, Jed I. Hollenbeck and Thomas Dougherty of Audenried, and W. D. Thomas, James Wear and Philip Edwards of Beaver Meadow, who viewed all the bodies of the victims and who, after the water was all out of the slope, and a travelling way had been made up to the scene of the breaking through into No. 8, on the 26th of February visited the


FAULT
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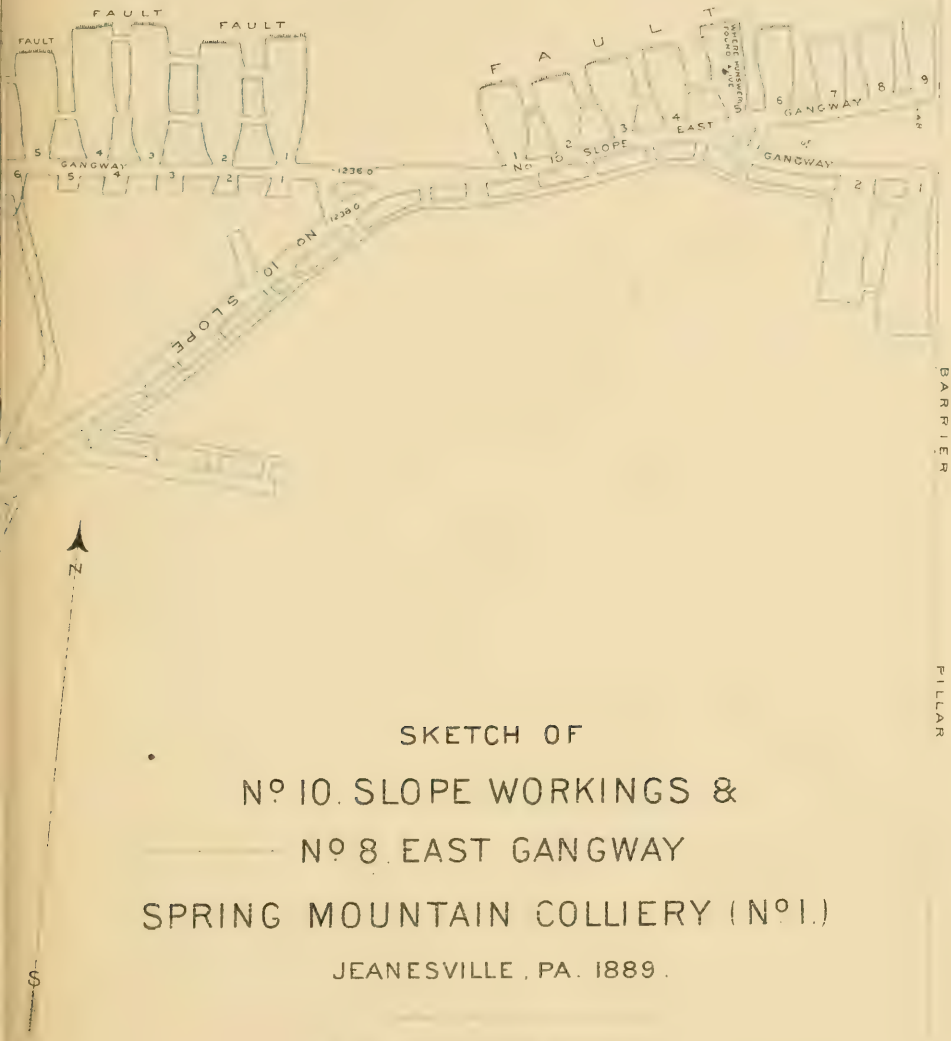


SKETCH OF

Nº 10. SLOPE WORKINGS &

Nº 8. EAST GANGWAY

SPRING MOUNTAIN COLLIERY (Nº 1.)

JEANESVILLE, PA. 1889.

A. J. Womelsdorf, Engineer.

place, with one exception, and on Friday, February 27, met at the Spring Mountain Hotel and there took the evidence of the following persons who they had summoned to appear before them. The following is a true copy of the evidence as taken by a stenographer at the inquest, and which I submit with the verdict and the maps without any further comments, feeling sure that the public will judge justly:

A. J. WOMELSDORF, being duly sworn testified as follows:

Q. Where do you reside?

A. Pottsville.

Q. Have you done work for the firm of J. C. Haydon & Co.?

A. For the past twenty-eight years.

Q. Have you made maps of the workings of the Jeanesville mines?

A. I continued the extensions. They were made before my time.

Q. Did you make a map of No. 1 slope?

A. I made extensions of No. 1 slope.

Q. Did you make a map of No. 8 gangway?

A. I extended the workings of No. 8 gangway.

Q. Did you make a map of No. 10 gangway under No. 1 slope?

A. That was an extension of old No. 1.

Q. Have you the maps which you could produce?

A. I furnished them for the inspectors and superintendents of different collieries.

Q. Do you recognize this map as the map you have platted?

A. That was a map made about the time I succeeded the Harris Brothers; this map is not correct; it has been called in; that is not an accurate map.

Q. Have you ever put any work on this map?

A. I put work on this map for Mr. Macfarlane so that he could sketch his work on it; I have advised him not to use this map; this map was never accurate and was discovered by me as inaccurate; this is utterly worthless and always has been. I cannot be strong enough in my objections to that map.

(Another map is brought in by Mr. Macfarlane.)

Q. Do you recognize this map?

A. Yes, sir, that is one of the four maps I make every quarter.

Q. Do you then certify to the correctness of this map?

A. That map I have always considered correct. It was made from the surveys of many engineers.

Q. Was this map made by you?

A. That tracing was made by us. This is nearly worn out; we will make a new map.

Q. What we want to know is whether you surveyed No. 8 gangway?

A. Yes, sir.

Q. This is a true map of No. 8 gangway?

A. I supposed it was.

Q. Did you survey No. 10?

A. Yes, sir.

Q. And in your opinion this is a true map of No. 10?

A. Yes, sir.

Q. And this map you furnished as a working map?

A. Yes, sir; as a working map for the removal of coal.

Q. Will you state when you surveyed No. 8?

A. I cannot unless it is written on this map; my notes have been destroyed.

Q. Have you any knowledge of any work having been done in No. 8 gangway after you surveyed it last?

A. I cannot say. It has been a long time. If I were put on my oath as to whether No. 8 stood as it is on this map I should take the benefit of the doubt.

Q. You testify that you have surveyed both No. 8 and No. 10 gangways under No. 1 slope?

A. Yes, sir.

Q. Did you find that No. 8 and No. 10 overlapped?

A. Yes, sir.

Q. When you found that the workings overlapped, did you give any directions as to the opening of No. 10?

A. I never give any directions. It is not my duty. My duty is to make the surveys and submit them to the company. The Lehigh Valley Coal Company and the inspectors. I have nothing to do with the drainage, ventilation, or mining of coal.

Q. Then why do you plat a breast in the gangway?

A. I plat a breast and submit to their own guides.

Q. Take this map, when it was made the breasts which you see were not in existence, were they?

A. They were not.

Q. Mr. Womelsdorf, did you know there was water in No. 8 workings?

A. No, sir, I never did. Had I known there was water, there would have been no accident. I would have insisted on the work being stopped at once. When I made the survey we were twenty-two feet away from the other mines. That was in November. In January there were only ten feet between the openings. It showed I could not have known there was water in No. 8.

Q. If you had known there was water in No. 8, would you have considered that distance sufficient to hold it?

A. If I had known there was water I should not have gone in myself, and certainly would not have allowed the men to go in.

Q. Was your attention called to the fact in January that there was water?

A. My attention was not called to it.

Q. When you were making January survey, did you say anything about putting in breast No. 12?

A. No, sir; I did not sketch No. 12 in January. I put another breast in there. I was looking for that gangway to go through an opening.

Q. Did you make the survey from No. 8 slope from the surface?

A. I think so.

Q. Did you ever try to make a tie in No. 1 slope through Wharton vein?

A. Yes, sir; that was a test of our own work. That was to make the steam hole.

Q. According to their report to you they came out correct?

A. Yes, sir.

Q. Then in the survey of No. 1 slope you had a chance to test that survey from your own surveys did you not?

A. Yes.

Q. Even from the surface of No. 7 to the top of No. 1, to the outer hole, you had a chance to see that your map was correct?

A. I have never made any surveys in relation to No. 8 since it was abandoned.

Q. Did I understand you to say you did not know the pumps were taken out of No. 8?

A. I have no recollection of ever seeing the pumps in No. 8 at all.

Q. Don't recollect that they told you that the last survey you made in there was the final survey?

A. I don't recollect.

Q. You understand on that point in the surveys before a mine is abandoned?

A. It must be surveyed and the survey verified.

Q. I want to know if you were notified of that?

A. No, sir.

Q. Have you ever received notice to make any special surveys?

A. Yes, for other purposes.

Q. No special workings of underground surveys?

A. I always made surveys everywhere.

Q. Do you know when this No. 8 was abandoned?

A. I have no record.

Q. Were you never required to put old No. 8 on the map?

A. No, sir.

Q. Did you never place tidal elevations on the map?

A. We put elevations on the greater part of our work.

Q. Were you requested by Mine Inspector Roderick to put them on?

A. They were put on at my request.

Q. Mr. Womelsdorf, what was the distance between No. 8 gangway and No. 11 breast? What does your map show?

A. About 38 feet according to the maps, at right angles about 28 feet. In solid coal 38 feet.

Q. How could it work through to No. 8 gangway if you left twenty-eight (28) feet between it?

A. I suppose that was the face of the gangway and the breast was going up this way. I thought there were twenty-eight (28) feet looking at the map.

Q. You platted it that way?

A. Yes, sir.

Q. We understand you to say that you considered there was thirty-eight (38) feet of solid measure between No. 11 breast and the terminus of No. 8 gangway?

A. That was what I thought when I looked at the map.

Q. You however platted that for the information of this colliery?

A. Yes, sir.

Q. Do you think the mine-boss would be perfectly safe in driving No. 11 breast out on your survey?

A. It would not make any difference where he went if it was empty.

Q. If he had driven out No. 11 breast, say for 300 feet would he in your opinion have struck No. 8 gangway?

A. He would have struck the breast from No 6 gangway.

Q. How far was breast No. 6 in No. 8 gangway, from No. 11 breast in No. 10 gangway?

A. It was not much further than 38 feet. If the breast went at right angles it would go into No. 6 breast. My attention was never called to the presence of danger.

Q. Does it not show that in this survey?

A. The map shows it.

Q. Was your attention called to the putting in of the inside rib of No. 11 breast on the survey of January?

A. No, sir. Then I would have been sure of something wrong there.

Q. Mr. Womelsdorf, was your attention called in any manner to lead you to believe that there was water in No. 8 gangway?

A. No, sir. If I had known it at all I would have been on my guard.

Q. Now, as a practical man, what would you naturally believe?

A. My duties are not to watch the water at all. Of course I have this colliery on my mind, but I have thousands of others also on my mind. My recollection of No. 8 gangway is that it went out and down to No. 7. Anything beyond that had entirely gone out of my mind. I had forgotten all about it in connection with many other places I have gone into. I know those mines fully. The last ten (10) or fifteen (15) years I have had many other collieries on my mind, and I cannot recollect all about this one. I only visit this colliery four (4) times a year.

Q. Does the law require the survey?

A. So far as the law is concerned, J. C. Haydon employed me to make

these surveys, and whenever there is anything we believe the law requires I go and do it. Whenever David sees anything he wants done he tells me and I do it. It does not make any difference when; when the inspectors ask anything they get it. There are some parts of these mines that are accurate, so accurate as to have attracted attention in years gone by. I do not know anything on this map that I could condemn, or I would rectify it at once.

Q. If your map is true, could No. 11 breast cut into No. 8 gangway?

A. If it went into the gangway there was something wrong in the survey of No. 8.

Q. Then you testify that if No. 11 breast could possibly cut into No. 8 gangway there was a mistake in your map?

A. Yes; there was a grievous mistake. Had I known that there was water the work would not have been done without my protest. If I had been told that the gangway than it was on the maps I would not have been surprised. There was a mismeasurement in the gangway.

Q. You don't pretend to be infallible?

A. No, sir.

Q. As I understand it, you make the surveys by which the mine-boss is to be governed in his mining operations?

A. In the removal of coal, yes, sir.

Q. And he is to be governed by your maps?

A. Yes, sir. It would not be safe to take any engineer's maps in certain quarters.

Q. If there were forty (40) feet of pillar there, do you think it would be proper for the superintendent to work that breast under your impression?

A. I cannot tell you.

Q Would not the mine-boss be perfectly justified in driving that breast?

A. I could not be sure.

Q. There was no possibility of No. 10 going into No. 8?

A. If the gangway was not right it could.

Q. Are you willing to testify that your map is correct?

A. As far as I know it is correct.

CHARLES BOYLE, the second witness, being sworn, testified as follows:

Q. Where do you reside?

A. Beaver Meadow.

Q. Are you in the employ of J. C. Haydon?

A. Yes, sir.

Q. Where did you work within the last month?

A. Down in No. 10 gangway.

Q. What breast did you work in?

A. In No. 11 breast.

Q. What course, east or west gangway?

A. West.

Q. What pitch were you working on?

A. I can't exactly tell you.

Q. Were you in north or south side of west gangway?

A. I was driving toward No. 8.

Q. Then you were on the south pitch?

A. Yes, sir.

Q. Will you tell the jury what work you were doing that day, the 4th of February, 1891, how long you worked, how much you cut, and all about your work that day and what happened?

A. We went up in the morning.

Q. Who was with you?

A. Patrick Coll. I was driving a cross heading into No. 10; my butty fired a hole in the face of the breast; we came down till the smoke cleared away; we sat down there awhile and went up again; I had a charge ready to tamp my hole, when he came running to me, saying: "There is something funny over there—like water;" I began to smile: then I heard a piece of coal fall; said he: "Let us get out of this;" then it went off like a shot.

Q. What went off?

A. The whole face.

Q. Did you fire a shot in the face of that breast?

A. I did not; but one was fired.

Q. There had been no other fired except that?

A. No, sir.

Q. Did you know there was any water above?

A. No, I did not know there was water above. I heard some men talking about water being in No. 8; I believe I heard there was water there.

Q. You believe, but cannot be positive?

A. No, sir; I am not positive.

Q. Did you ever work in No. 8?

A. No, sir, I did not.

Q. Did you ever work in any other part of the mine for J. C. Haydon & Co.?

A. No, sir.

Q. Did you have any wet holes in your breast at this time?

A. No, sir; every hole I had driven was dry.

Q. Was the last hole you were going to tamp dry?

A. Yes, sir.

Q. You were going to fire it with a needle?

A. Yes, sir.

Q. The hole you were going to fire was in the heading was it not?

A. Yes, sir.

Q. How close is the heading to the face?

A. It is right across from the face.

Q. You never saw any sign of dampness in the face of your breast?

A. Not a bit.

Q. Did you ever hear any of the officials say there was water in the abandoned No. 8?

A. Well, no, I did not. Not to my knowledge. I know I asked for a breast inside there, and he said "no we are going to leave that."

Q. Who told you they were going to leave the two breasts?

A. The inside foreman.

Q. Why did you hurry to get down the breast when your butty said "there was something comical in the breast?"

A. Because I thought there was something that was not very healthy.

Q. What did you think it was?

A. I did not know what it was.

Q. You knew when you got down?

A. Yes, sir.

Q. How much water did you expect was coming?

A. That was more than I can tell you. When it broke I did not know whether it was a mountain or what it was.

Q. What kind of a noise did it make?

A. It was like the explosion of a blast. Something similar to that.

Q. You stated before you went down the manway you heard a piece of coal rally?

A. Yes, sir.

Q. It shot right out from the face, did it not?

A. Yes, sir.

Q. Did you find any water in Coll's manway?

A. No. As soon as we came to the platform we found a stream coming down. No water followed down our gangway, not a drop. Both of us went down the same manway.

Q. You were not in the face?

A. I was not there that morning.

Q. That was the only shot fired in the breast that morning?

A. It was.

Q. You did go over to his side of the breast at times, did you not?

A. No, I very seldom went over. Every man used to handle his own.

Q. Did you expect that your breast was finished when you asked if you could have breast 12?

A. No, sir.

Q. You were not afraid to work breast 12 on account of the water?

A. I was not.

Q. Had you at any time previous to February 4, felt any fear of working in the breast?

A. No, sir; I did not.

Q. You felt no fear when you drilled a hole there?

A. No, sir; not the least.

Q. Was your breast comparatively dry?

A. No. It had wet holes down there.

Q. You say you never heard of any water being in No. 8, still at the same time you knew it was there, did you not?

A. I was not sure of it.

Q. Had you any idea you were anywhere near No. 8?

A. No, sir.

Q. When you heard the water coming did you notify any of the others?

A. Told every one that was down the place. We made for the airway, the others that were outside made for the bottom.

Q. Who came out with you?

A. William Coyle and Patrick Coll.

Q. What day did this occur?

A. February 4, 1891. It happened between ten and eleven o'clock.

Q. When you were making your escape did you have to run?

A. I did not go up more than thirty (30) feet until the water caught me.

Q. Did the water follow you up?

A. Yes, sir.

Q. You did not get into it, did you?

A. Yes, sir, I did.

Q. Where did it catch you?

A. In the airway.

Q. That airway is a traveling way, is it not?

A. No, sir.

Q. Is there a ladder there?

A. Yes, sir.

Q. Had you ever gone up there before?

A. Yes, I went up to see what it looked like.

Q. Your partner went up too?

A. Yes, sir.

Q. And a young man named Coyle went up too?

A. Yes, sir.

Q. Did you warn Edward Gallagher?

A. Yes, sir. And his boy yelled for all he was worth. I yelled for Gallagher but could not hear any answer.

Q. You did not get any report from him at all?

A. None that I could hear.

WILLIAM COYLE, the next witness, being sworn, testified as follows:

Q. Where do you reside?

A. Jeanesville.

Q. Where do you usually work?

A. I was working about six (6) weeks with my stepfather in No. 1 slope.

Q. What day did you work there last?

A. The 4th of February.

Q. What day of the week was that?

A. Wednesday.

Q. Did you work there all day?

A. No, sir.

Q. Why did you not work there all day?

A. This water broke and I got out of it.

Q. What water?

A. From No. 8 slope.

Q. Where were you when it broke in?

A. I was down on the platform of the lower breast.

Q. Which was your breast?

A. I don't know the number of it.

Q. Where was your breast situated in relation to Coll's and Boyle's breast?

A. Right across the gangway.

Q. Where did it stand in relation to the airway you came up?

A. It was the next breast to the airway.

Q. Had you a hole through the airway?

A. Yes, sir.

Q. From the inside manway or the outside manway?

A. The inside manway.

Q. Which way did you come up? Did you come up the gangway or up your manway?

A. I got off our platform and came up our manway.

Q. How deep was the water in the gangway when you came up?

A. There was none at all.

Q. You came up past the hole that was in your breast into the airway?

A. Yes, sir; I stood and yelled.

Q. To whom?

A. My stepfather.

Q. Who is your stepfather?

A. Edward Gallagher.

Q. Did you hear any answer?

A. No, sir.

Q. Did the water come up to you?

A. No, sir.

Q. Did you hear any shot go off in your breast before you went up?

A. No, sir.

Q. Had you been up the outside manway at all with your stepfather?

A. Yes, I have been there.

Q. He was firing the shot and you expected he would come down to the platform?

A. Yes, I expected that.

Q. How long had you been there when you heard these men call?

A. A second or so.

Q. What did they say?

A. I can't say; I remember calling out to Charlie Boyle, "Look out boys."

Q. What did you think was wrong when they yelled?

A. I thought their battery had burst out.

Q. Where were they?

A. Down the gangway.

Q. Between you and the airway?

A. Right down at their own breast.

Q. You did not know there was water coming when they called?

A. No.

Q. Did you know there was any water in No. 8 workings?

A. No, sir.

Q. Did you know there was such a place as No. 8?

A. Yes, I knew that, but did not know we were so close to it.

Q. Did you hear the noise of the water before or after this?

A. Right when they yelled it made a break.

Q. There was no water in the gangway at the time?

A. No, sir.

Q. Did your light go out at once?

A. No, my light went out when I got up to this heading?

Q. Had you warned your stepfather before this?

A. I do not know whether I called before or not; I only remember I called when I was up at this heading.

Q. While you were at this heading did Patrick Coll pass you?

A. I don't remember.

Q. Was any one ahead of you when your light went out?

A. I did not remark it; I thought I was the last on the platform.

Q. Did the water come up to you at all?

A. No, sir.

Q. Did you assist Boyle out of the water?

A. No, sir.

Q. Did your stepfather tell you he was going to fire that shot?

A. No, sir.

Q. Did you call to him?

A. Yes, but I got no answer.

Q. You thought he was all right?

A. No, I was most sure he was caught in the water.

Q. When did you first find out where this water came from?

A. I kind of remember hearing one of the men saying No. 8 had burst in.

WILLIAM HALE, the next witness called, being duly sworn testified as follows:

Q. What is your employment?

A. Mine foreman.

Q. In charge of what?

A. In charge of No. 1 colliery.

Q. Were you in the mines on February 4th?

A. Yes, sir.

Q. Do you remember what occurred that day? Will you please state all you know of this matter?

A. Well, I went down No. 10 slope about ten (10) o'clock. On my way down I found the wind from something on my lamp and stopped to find which way the wind was coming from; I found it was coming from the slope. I ran to see what had happened, and met the men who had escaped coming up and they told me the water had burst in. I went down until I had to retreat back; I came up to the counter gangway and got out five (5) men from there. I sent some of the other men who had escaped into the west gangway to get the other men out.

Q. What water did you suppose had broken in?

A. When I saw the water I thought it was from No. 8.

Q. You were under the impression it was No. 8 water?

A. Yes, sir.

Q. What reason had you to think so?

A. Because it was the only place that contained water.

Q. You knew the water was there?

A. Yes, sir.

Q. Did you ever have access to any of these mining maps?

A. Yes, I looked over them with Mr. Macfarlane.

Q. Your business was to examine the breasts every day or frequently?

A. Yes, sir.

Q. Did you examine No. 11 breast on the No. 8 side that day?

A. No, sir.

Q. How recently had you examined them?

A. I think it was on Monday.

Q. The Monday previous; February 2d?

A. Yes, sir.

Q. Were you not expected to go into your breasts every day?

A. If they needed it.

Q. Did you know or think this breast was working in close proximity to No. 8?

A. I knew it was there, but thought we were safe in working it.

Q. Did you make any special examination to see if there was any water?

A. I did, sir.

Q. Did you see any sign of more water than ordinary in the face of that breast?

A. No, sir.

Q. Did you have any drill holes anywhere in that breast so as to find out whether you were approaching water?

A. No, sir.

Q. Are you fairly acquainted with mine law?

A. Pretty fairly.

Q. Do you know what it says about drill holes when working in the vicinity of old workings that contain water?

A. Yes, sir.

Q. Why did you not have drill holes in that breast?

A. Because we thought there was sufficient distance between them.

Q. What made you think that?

A. The map.

Q. What did the map show according to your recollection?

A. Sixty (60) feet.

Q. This map?

A I wont be positive whether it was that map or not.

Q. It was the office map, was it?

A. Yes, sir; it was.

Q. Who furnished it?

A. Mr. Macfarlane.

Q. You say it was sixty (60) feet; did you measure it or did you guess?

A. Mr. Macfarlane made the measurement, I did not make it.

Q. Did you consider that sixty (60) feet was close to old workings?

A. No, I did not consider that too close.

Q. Did you consider that sixty (60) feet was close enough to comply with the mine law?

A. Yes, sir.

Q. You would not, when approaching old workings, begin to bore until you were within sixty (60) feet?

A. It would depend on the thickness of the vein.

Q. How long have you been engaged in the business of mine foreman?

A. I have been under J. C. Haydon for three years and a half.

Q. Were you engaged by any one else previously?

A. By Mr. Pardee six months.

Q. Did you always, as mine foreman, have access to the maps?

A. Yes, sir.

Q. Did you always find the maps accurate?

A. We had to go by the maps whether they were accurate or not.

Q. Did the maps come out correct with your work in the mines?

A. No, sir.

Q. You have found places where they did not come out correct?

A. This was the first place.

Q. Then you had entire confidence in the maps?

A. Yes, sir.

Q. Did you notice that the course of No. 11 breast, No. 10 gangway, would take you into No. 6 breast, No. 8 gangway, if you continued far enough?

A. No, sir.

Q. Were you inside foreman at that place when No. 10 gangway was stopped?

A. Yes, sir.

Q. Your maps showed that No. 10 gangway was very close to No. 8 gangway?

A. Yes, sir.

Q. Did you ever have any bore holes in that gangway?

A. No, sir.

Q. Why not?

A. Because we did not think it was necessary, all the coal running out in that gangway.

Q. Was the coal run out at the airway that you drove?

A. Yes, sir.

Q. How thick was the vein in the airway?

A. Three (3) feet, maybe.

Q. And at the face, where it is stopped, it is how thick?

A. In the face there was no coal at all.

Q. Have you had any experience in faults?

A. Not a great deal.

Q. Have you had enough to know that veins sometimes open out very suddenly?

A. Yes, sir.

Q. Were you expecting No. 10 gangway to open out?

A. No, sir.

Q. How much distance was there between the inside of No. 11 breast, No. 10 gangway, and the face of that gangway?

A. About one hundred feet.

Q. There was room then for one or two breasts, was there not?

A. Yes, sir.

Q. Was the vein thick enough to open another breast?

A. Yes.

Q. Why did you not open a breast on it?

A. Because we thought it was too near No. 8.

Q. Did any one ever ask for a breast there?

A. Yes, I was often asked for a breast there.

Q. Did any of the officials want a breast opened there?

A. No, sir.

Q. Did you ever get any directions from the surveyors?

A. No, sir.

Q. Had you any idea that you were close to the water?

A. Not the least.

Q. Do you recollect the direction of No. 11 breast?

A. I believe it was about north ten (10°) degrees west.

Q. How many feet was the face of the breast up from the gangway?

A. One hundred (100) feet.

Q. You have always worked according to the drawings you got from the surveyors, have you not?

A. Yes, sir.

Q. You supposed them to be right?

A. Yes, sir.

Q. Were you present when the last survey was made in January?

A. Yes, sir.

Q. You generally go with the engineers when they are surveying your mine, do you not?

A. Yes, sir.

Q. Then you were present when this gangway was surveyed?

A. Yes, sir.

Q. Was that gangway stopped previous to this January survey?

A. Yes, sir.

Q. When this survey in January was made where were you when the instrument was placed at the foot of No. 11.

A. I did not see it placed there.

Q. Were you in No. 11 breast at all while the surveyors were there?

A. I was on the gangway close by.

Q. Did you hear anything said about putting No. 11 breast on accurately?

A. Yes, sir.

Q. Will you please state what was said?

A. I heard Mr. Macfarlane ask Mr. Womelsdorf to take a sight back to that breast and see that it was put on right.

Q. Did he ask anything about the rib of the breast being put on accurately?

A. He asked one of the miners to hold his light up the breast; I was about ten (10) yards below; I heard him ask if he had his light in the right place.

Q. Who asked if the light was in the right place?

A. I believe it was Mr. Womelsdorf.

Q. You did see him take a course with his instrument?

A. No, sir; I could not tell where it was.

Q. You overheard the request that the breast be put on right?

A. Yes, sir.

Q. Did Mr. Macfarlane state why he wanted it put on accurately?

A. Because there was water in No. 8.

Q. When you understood there was water in No. 8, did you feel any fear of No. 11 going through?

A. Not the least.

Q. What did you rely on?

A. On the map.

Q. When did you see this map last?

A. Some time in January.

Q. After its return from Pottsville?

A. Yes, sir.

JOHN BOYLE, the next witness being sworn, testified as follows:

Q. Where do you work?

A. I worked in No. 1 last.

Q. Where do you live?

A. I live in Jeanesville.

Q. Are you a miner or laborer?

A. Generally a miner.

Q. What were you doing at No. 10?

A. Mining.

Q. Where?

A. No. 9 breast.

Q. Are you in possession of a mining certificate?

A. Yes, sir.

Q. Were you working in your breast No. 9, on February 4?

A. Yes, sir.

Q. Did you discover a rush of water into the gangway?

A. I was on the gangway when the thing happened.

Q. Will you tell what you know about it?

A. I don't know anything, only I heard the stuff thundering. I knew it was water, for it was not like rock or coal. It made a different noise. It was thundering and hissing and I called out, "It is water." Some of the men did not know what it was till I yelled. Instinct told me what it was; and I believe it was that that saved me.

Q. You were in the gangway when it happened were you not?

A. Yes, sir.

Q. Did the water strike you?

A. No.

Q. Did you know where the water came from?

A. I did sir. I knew it was No. 8 water.

Q. You knew then that No. 8 was filled with water?

A. I did sir.

Q. Did you ever have any fear?

A. I did not.

Q. You would not have worked there if you had thought so?

A. I guess not.

Q. To whom did you call out to that "it was water"?

A. I know I told John Nelms who was with our laborer at the time. He was loading a car on the platform.

Q. Did you see Porter or Ward?

A. I did, they were on their platform.

Q. When you started to go down the gangway, did McCloskey have a light?

A. I believe he had.

Q. Did he start to follow you?

A. Yes, sir.

Q. Had John Nelms gone away?

A. He had started, but I could not say how quick he went.

Q. You did not know who was behind you?

A. I knew McCloskey was twenty (20) or thirty (30) yards behind me.

Q. When you got to the slope, had any of the boys gone up?

A. No, sir.

Q. You turned right up the slope?

A. Yes.

Q. Did the water overtake you in the slope?

A. No, sir. Outside of No. 9 breast McCloskey drove a breast, John Nelms and I both fell there and that is where the water caught me. We had to go through the dog hole and up around the slope. The cars were behind and they broke the water.

Q. Did you hear the cars running?

A. It was as if there were a hundred (100) cars.

Q. You did not see McCloskey after, did you?

A. No, sir.

Q. Did you communicate to Ward and his partner or did they know?

A. They knew something was the matter. I did not see them go down the gangway. Saw them jump. That was all.

JOHN NELMS being called and sworn, testified as follows:

Q. What is your name?

A. John Nelms.

Q. Where do you reside?

A. No. 4, Jeanesville.

Q. Where are you engaged?

A. I am engaged under Mr. Haydon.

Q. What is your business?

A. Company work. Turning off branches.

Q. Where do you work?

A. Down at No. 10 slope.

Q. What were you doing on the fourth of February?

A. We were turning a branch off for a breast. We were starting to load a car. We were the only men in that gangway.

Q. You were in there on February 4.

A. Yes, sir.

Q. Please state what you know about this?

A. All I know is a Hungarian who worked with me, and I were loading a car when heard a noise and supposed it was a car coming down the slope from that branch into the next branch. Soon Boyle came down yelling, "hurry up, here is water coming." And I stood a second and John came down to me "hurry up" he said "the water will catch you." So I went to the next branch. Before I got to the bottom my light went out

Q. Did you know where this water came from?

A. I thought it was from No. 8.

Q. Did you know that No. 8 workings were full of water?

A. Yes, sir.

Q. And you knew that the No. 10 workings were somewhere in the vicinity of the old No. 8 workings?

A. Yes, sir; I did not know how close. I judged it was from 60 to 70 feet from No. 8.

Q. Did you never see the maps?

A. No, sir.

Q. You never felt alarmed?

A. Never felt a bit alarmed sir.

PATRICK COLL. the next witness, being sworn, testified as follows:

Q. What is your name?

A. Patrick Coll.

Q. Where do you live?

A. Beaver Meadow.

Q. Where are you engaged usually?

A. Jeanesville.

Q. How long have you worked in these mines of J. C. Haydon and Company?

A. About eight months.

Q. Are you a miner by trade?

A. Yes, sir.

Q. Where did you work on the 4th of February?

A. I worked in this breast.

Q. What was the number of it?

A. Number eleven (11).

Q. Will you please tell the jury all you know about the accident?

A. I went up there that morning and drilled a hole and fired it; I then returned to the face and barred some coal, then picked away some soft stuff. I went over to my partner and told him I had found the face "dribbling" out like a squeeze, and would not work in that place. "I am going to get down I said." I went down to the platform. Then he said, "If we are going to get any more water it will wash all the coal out." With that the whole face came bursting out and I yelled to my partner to make for the airway.

Q. What were you afraid of when you told the man it was working?

A. I did not like to see that water coming; there was a little water from the day before.

Q. Was more water than usual coming in the day before?

A. The day before we struck the first water.

Q. Did you tell the mine boss when you found that water?

A. No, sir; I did not.

Q. Did you know of any water being above you there?

A. I heard of it.

Q. Was that what you were afraid of?

A. Yes, sir; I did not know what it was; did not know anything about it. I heard there was water in No. 8, that was all.

Q. What part of the breast did you drill the last hole in?

A. In the rib; a four and a half foot hole.

Q. Was the hole visible on the rib?

A. No, it was not.

Q. Do you think it is visible now?

A. I do not know.

Q. Did you know anything about No. 8 being full of water?

A. No, I did not.

Q. Did you ever have any fear of working that breast before?

A. Well, the day before I spoke of it I borrowed six squibs from a man, Nelms, to fire a wet hole. I burned the six squibs in it before I got it fired. The next day I said to him, "Do you think there is any danger from No. 8 water?" "I don't think there is," said he.

Q. Did you notify the mine foreman when you first saw the water?

A. No, sir.

Q. Why not?

A. I did not think it was necessary at the time. We struck water the same way up the last breast we drove.

Q. What other breast did you drive in that gangway?

A. Number five.

Q. Any other one?

A. Number three.

Q. Did you have more water in No. 3 or No. 5 than you did in No. 11?

A. I don't know about that. It came out on the platform of No. 11 stronger. It was pretty wet on Boyle's side.

Q. You had a dry breast until the day before you tapped this water?

A. Yes, sir.

Q. Did you not think you ought to have notified the mine foreman of that wet hole?

A. Then at that rate I could be notifying them all the time.

Q. Did you ever fire a hole in No. 5 breast and use six (6) squibs?

A. I do not know if I did.

Q. Did this hole explode?

A. No, I drilled it out.

Q. You charged it again?

A. Yes, sir.

Q. Was your breast pretty well squared up before you began to drill the first hole?

A. This was a hole drilled in my side of it.

Q. After the fatal shot was that the squaring up hole?

A. Yes, sir; it was.

Q. When you went in there on Wednesday morning, was it very wet in the face?

A. Well, it was not so very wet. There was a little dripping. I told Boyle, I think it was, "this manway is getting pretty wet".

Q. Was it not wet enough to make you think of the No. 8 water?

A. I don't know how it was. But I guess if I had been afraid, I would not have gone up picking.

Q. Don't you make it a rule to notify the mine foreman when anything extraordinary occurs in your breast?

A. Well, no, I have not.

Q. Who was your partner in this breast?

A. Charles Boyle.

Q. How long had he been your partner?

A. Since I started there.

Q. Did you and your partner have any talk about No. 8 water before the break occurred?

A. I don't know. I might have mentioned it to him.

Q. Did you ever work for J. C. Haydon & Co. before last May.

A. No, sir.

Q. When you made your escape, did you say that you tried to notify all within hearing?

A. I did not notify any one until it burst out and then I yelled.

Q. Did you see anything of Edward Gallagher?

A. No, sir.

Q. Did you call to him?

A. Yes, sir we called to him.

Q. Did you get any answer?

A. No, sir we did not.

DAVID MACFARLANE, being duly sworn, testified as follows:

Q. Where do you reside?

A. Jeanesville.

Q. What is your business?

A. Superintendent of these coal mines?

Q. What coal mines?

A. Jeanesville coal mines, for J. C. Haydon & Co.

Q. Will you please state to this jury what your duties are in connection with your position?

A. My duties are to direct and instruct the inside workings, being governed by a map.

Q. How long have you been directing this work?

A. Since December, 1881 as general superintendent. As mine foreman since the year 1873.

Q. Was gangway No. 10 driven under your direction?

A. It was.

Q. Did you direct the working of No. 10 gangway west?

A. I did, sir.

Q. Do you know anything about No. 8 gangway?

A. Yes, sir. Had the opening of No. 8.

Q. Full directions?

A. Yes, sir; had charge of the work when it was opened and when it was abandoned. It was in four lifts.

Q. When did you abandon No. 8?

A. May 30, 1888.

Q. Was that before or after the last survey?

A. Long after.

Q. Do you mean by abandonment that you stopped taking out coal and took out pumps?

A. Yes, sir.

Q. Was the east gangway driven after the last survey?

A. None whatever.

Q. When you had concluded to abandon No. 8, did you have it surveyed, as is required?

A. Had it surveyed square to the face with my own light against the face of the gangway.

Q. No. 8 gangway east?

A. Yes, sir.

Q. You say there was no more cutting or work done in the east gangway after that survey?

A. I certify to such.

Q. You state that No. 10 west gangway was driven under your direction. Now, did you anticipate any trouble from the water in No. 8 when you drove that gangway?

A. None whatever, sir, as my knowledge led me to know that we had sufficient pillar between us and the gangway.

Q. What do you call sufficient?

A. I call anything from forty (40) to fifty (50) feet sufficient.

Q. Did the map show from forty to fifty feet?

A. The map showed me from fifty to sixty feet.

Q. And you drove the gangway?

A. Yes.

Q. Is this the map?

A. I had access to that map and also to a map at home.

Q. Does this map show forty (40) feet?

A. Not quite; my map showed more than that.

Q. How did you reconcile the difference in the maps?

A. I was led to believe there was more distance between the gangways than this map shows.

Q. So you were not satisfied that the relative positions of No. 8 east and No. 10 west gangways were correct?

A. I was satisfied that they were not correct.

Q. Did we understand you to say that you knew that No. 8 was full of water?

A. Yes, sir; I knew it full well.

Q. Did you order No. 11 breast to be started?

A. No. 11 breast was put on survey some time last October, but I would not allow it to start until the map was sent back showing sufficient pillar to allow No. 11 to start. It did not start until December, until my instructions were given, when I knew there was nothing but solid coal, and did not anticipate any danger from No. 8 water whatever.

Q. If you thought the relative position of No. 10 and No. 8 gangway was not correct, would it not naturally lead you to doubt the accuracy of the entire map?

A. I had no reason for thinking so; I had no reason to believe there was anything wrong east or west. The airway was 115 feet between the counter; I had measured it myself.

Q. Why should the map be wrong in one direction and right in the other?

A. I had no reason to believe there was anything wrong, only in that which I knew positively.

Q. Do the workings of No. 1 slope run in almost every direction?

A. Yes, sir.

Q. So that any error that might be made in those surveys might be multiplied in any other direction, and might be wrong east and west as well as north and south?

A. Yes, sir.

Q. It did not strike you that if the map was wrong in one direction it might be wrong in the other?

A. No, sir, or I assure you No. 11 breast would not have started in December. In October I told Mr. Womelsdorf that he should put No. 11 breast on the map accurately in order to show sufficient pillar between No. 8 water and No. 11 breast. I told the mine foreman when the map came back in December. On the 19th day of January our surveyor returned to survey it; I made a special request of Mr. Womelsdorf to survey No. 11 accurately. He wanted to know why; I told him so that I would know whether I had still pillar enough left, as it had advanced forty (40′) feet up. The gangway drove one hundred (100′) feet past the station where he sat. He called to one of the men to hold their light

whether they did or not I do not know, but I asked when I came back whether he had got that breast accurarely and right for me. He said he had. When the map returned after the survey, the first thing for me to do was to find that that breast was up past the No. 8 gangway some forty-six (46′) or forty-eight (48′) feet.

Q. How did you know that, by the map or by measurement?

A. By accurate measurement.

Q. You say you were accustomed to use the map to direct this working.

A. Yes, sir.

Q. Did you not notice that breast on the map was further than you thought it was?

A. I gave very little thought to that, I gave the thought to the sufficiency of pillar between the end of the gangway and breast.

Q. How much did the maps show between the end of the gangway and the west rib of No. 11 breast?

A. About forty-eight (48′) feet. On the other map it was a little more than this. I was as much under the direction of the other map as I was of this.

Q. Did you ever compare the maps?

A. Not particularly.

Q. Did you ever have any thought as to the possibility of striking into that water?

A. Not one thought of it, sir. Felt as easy on No. 11 breast being driven as on any other part of the work that was being executed in town.

Q. You understand that the mine law provides for anything like this?

A. I understand that. And if we had been approaching water we would have had the usual precautions we always had, but we were not going toward that water. If we had been going toward that water, we would have started a breast in that hundred feet of gangway. We were not desirous of taking that water out through No. 10 slope.

Q, You consider then, that when you find inaccuracies in a map that you are perfectly safe in working by it?

A. I felt safe by having forty-eight feet of pillar between that water and myself.

Q. And would not consider your driving a breast within forty-eight feet of a large body of water that you were approaching that water?

A. Would not consider I was in any danger.

Q. Even when you knew that the map was inaccurate in one respect at least?

A. Would not have the least fear.

Q. Did you ever instruct your mine foreman to keep a lookout in that portion of the workings?

A. I gave that portion of the workings my usual supervision. I told the mine foreman to look at the map and see as well as myself that we had sufficient pillar between the No. 8 water and that breast to work in

it. But I never told the foreman to use any precautions toward that water, as my maps showed that there was no necessity.

Q. Did you ever know engineers to make mistakes before this one?

A. Never knew it before.

Q. Have you had Mr. Womelsdorf do your surveying ever since you have been superintendent here?

A. Yes, sir.

Q. Was he the mining engineer previous to that?

A. He was.

Q. Have you had him make any special surveys in putting down bore holes or anything of that kind?

A. Yes, but not doing it himself, Mr. Brooks did it under the charge of Mr. Womelsdorf.

Q Did those bore holes come out correct?

A. Yes, sir.

Q. Had you confidence in Mr. Womelsdorf as a mining engineer?

A. I had all confidence in him. Thought his map was as nearly accurate as possible. Felt it was accurate and felt safe in his hands.

Q. Did you believe No. 8 gangway was on the map in its full length?

A. I believed it was accurate.

Q. How was breast No. 6 put on?

A. By measurement from No. 5.

Q. Have you been in the mines with Mr. Womelsdorf when he made surveys?

A. Yes, sir.

Q. Did he not locate the openings along the gangway?

A. Not in all cases. He did on the No. 10, going back along the south side of these breasts. The airway he located by survey at the bottom.

Q. Could you not tell then from examination of the map, whether they had been located properly?

A. I could tell, sir. In that gangway it did not matter whether it was ten feet in too far, or ten feet out too far.

Q. Did you ever notify Mr. Womelsdorf that you had water in No. 8?

A. I did sir. In the month of October, also in the month of January. And he asked me why I did not put in No. 12 breast, I told him it would approach the water of No. 8, and we did not want the water of No. 8 down into No. 10. I requested that the No. 11 breast be put on accurately.

Q. Have you made the measurement of No. 8 gangway since the water is out?

A. Yes, sir.

Q. Do you know the distance from the No. 6 breast to the face of the No. 8 gangway?

A. I think fifty-four or fifty-five feet.

Q. How do you account for the distance being so much greater than you thought?

A. My recollection was thirty-six feet or over.

Q. You are sure that No. 8 did not go on after Mr. Womelsdorf made the last survey?

A. I am sure; that was stopped in the year 1886, on the first of June. It was surveyed on the 29th day of June, and never worked after it was surveyed. My daily record book will show such if it is necessary.

Q. Did you ever refer to those records in any of your deliberations about this water in No. 8?

A. Never sir; I trusted to memory and the map.

Q. You say you have a working map at home which you produced here this morning?

A. Yes, sir.

Q. Mr. Womelsdorf testified that he had notified you that that map was incorrect. Were you not working with that same map all the time?

A. Working with that map, and the tracings were put on that map by himself and were supposed to be accurate.

Q. Had he ever recommended the abandonment of that map?

A. No, sir; it was his business to provide me a new one if it was not correct, but he gave it to me and showed it to be as accurate as the work he was doing on this.

Q. In this connection were all arrangements about surveying made by you with Mr. Womelsdorf?

A. He made his own arrangements; made his own time, then sent word to see if it would suit me; but I did not direct him any.

Q. Had he informed you that the map was not accurate, you would have instructed him to give you another, would you not?

A. That would have been my place, and I would have done it at once. I would have told him to take the other away and burn it.

Q. Give us the reason for this accident?

A. The gangway ought to have been back from No. 11 breast at least forty or fifty feet.

Q. If it had been accurately measured this accident would not have occurred?

A. It would not.

Q. Do you think this accident would have occurred if you had kept bore holes in the breast?

A. No, sir.

Q. You say you found the map inaccurate?

A. Yes, sir; the distance from the gangway to No. 11 breast was not equal to that laid down on the map.

Q. Can you testify that you notified the mining engineer that there was water in old No. 8?

A. I testify to such in the months of October, 1890, and January, 1891.

Q. You drove this breast up from suggestions you had from this map?

A. Yes, sir.

Q. And you find a mistake now?

A. A great mistake.

Q. How much of a mistake?

A. About ninety-five feet.

Q. Might not that error be in the angles as well as in the distances?

A. It might be; I am only saying how I found the gangway.

Q. And you notified Mr. Womelsdorf of water lying in old No. 8?

A. I did.

Q. And you thought there were from forty to fifty feet of solid rock between No. 11 breast and terminus of gangway of No. 8?

A. Yes, sir.

Q. Now, in your opinion, as a matter of fact, did No. 11 breast drive into old No. 8 gangway through that error?

A. No. 11 breast drove into No. 8 gangway through that error or it would not have driven in.

Q. And in your judgment that was the cause of these men's deaths?

A. That was the cause of their deaths.

Q. Who placed this pencil sketch on this map?

A. Mr. Womelsdorf placed it there and showed it to me. Then he said we had driven our breast into breast No. 6 of No. 8 gangway.

Q. We would like to know who died on account of this accident?

A. Edward Gallagher, breast No. 12 on south side of gangway; Patrick Kelly, breast No. 11, south side of the gangway; James Ward, breast No. 9, north side of gangway; Michael Polish, found in top of breast No. 9 north side of gangway; Samuel Porter, in breast No. 9 in the western manway, north side of gangway; Lawrence Reed, Henry Ball, Michael Smith and James Balack, found in breast No. 1 south side of the southeast gangway; Joseph Orsock, breast No. 1 south side of southeast gangway; Bernard McCloskey, found at the junction of the northeast and southeast gangways, in front of a mine car; James Griffiths, found at the same place between cars and pillar; Thomas Geke, found in the northeast gangway floating on the water.

CALEB WILLIAMS, a witness, being sworn, testified as follows:

Q. What is your business?

A. I am inspector for the Lehigh Valley Coal Company.

Q. What are your duties?

A. I see that the coal is taken out properly from the mines.

Q. Have you inspected these mines where this accident occurred?

A. Yes, sir.

Q. Do you use any map to govern you?

A. Yes, I have a map. The Lehigh Valley Coal Company furnished it.

Q. Who makes the map?

A. Mr. Womelsdorf.

Q. Do you recognize this map as a copy of the one you use?

A. Yes, sir; an accurate copy of the one I use.

Q. You take it for granted that these maps are correct and you work according to them?

A. Yes, sir; I find the gangways are surveyed, but a number of these workings are platted on by bosses.

Q. If they had been surveyed by the mining engineer and placed upon that map, you would look upon them as a correct measurement?

A. Yes, sir.

Q. If you were to examine this map and find a breast surveyed that would run out to the surface in a parallel line forty to fifty feet to one side of an old working and the heading of an old working showing fifty feet of solid measures between them, would you consider you were working toward water?

A. I should judge forty feet would be safe in that vein.

Q. If you were to go up a certain distance according to the map and would drive into No. 8. What would be your opinion of that?

A. I would think there was a mistake in the survey.

Q. Then you would consider that a mine foreman or a miner would be perfectly safe in driving by a gangway that was shown on the map beyond any workings?

A. Yes, sir; I think he would be safe.

Q. You have been governed by this map?

A. Yes, sir; I visit Jeanesville two or three times a month and have always been governed by that map

Q. Did you know of the water in No. 8 workings?

A. No, sir, I did not. It was abandoned previous to my coming here.

Q. Have you authority in case you find that workings are going into dangerous places to stop them?

A. No, sir; I have no authority.

Q. You report, do you?

A. I report to my superior.

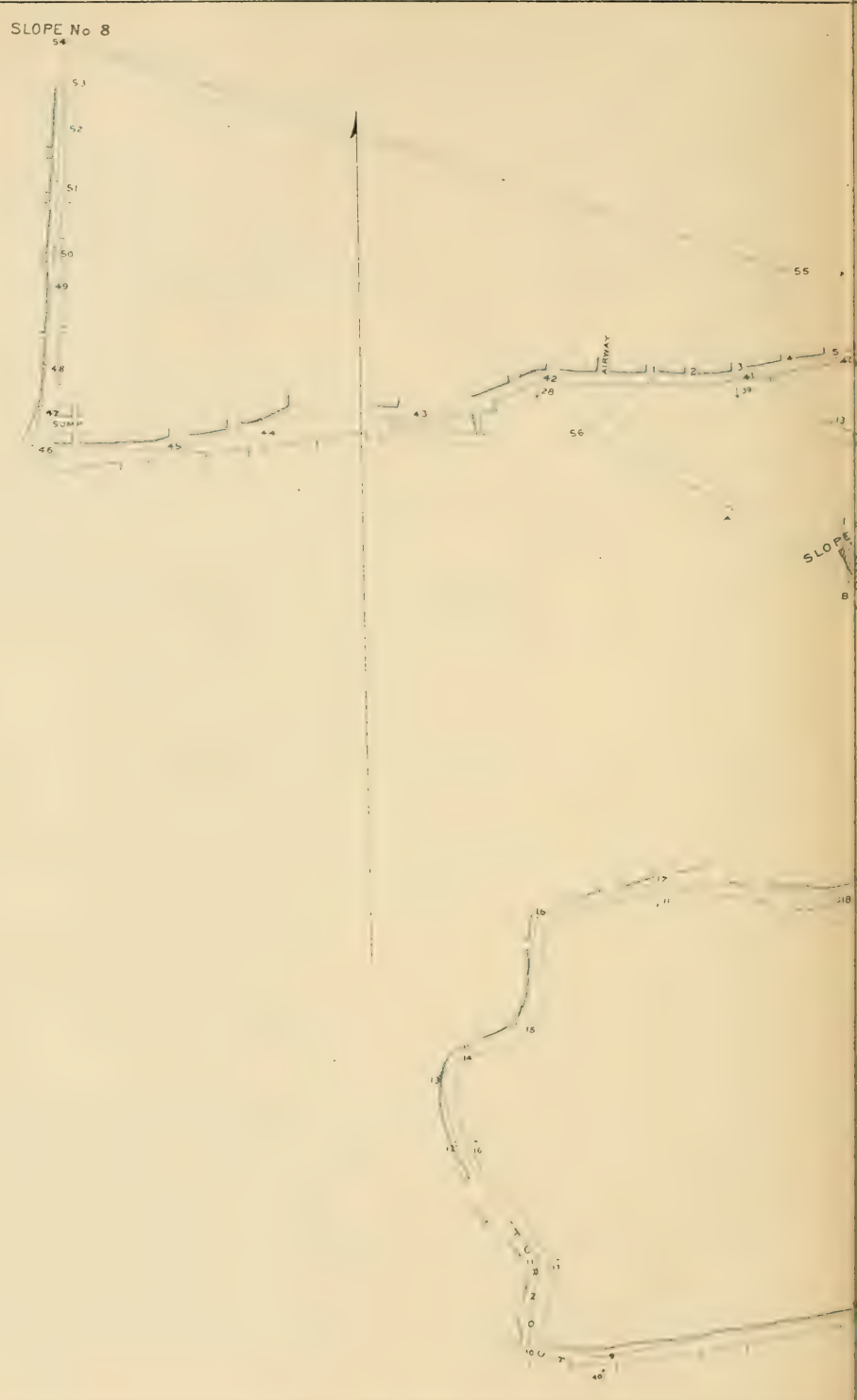
Q. You knew nothing about the water in No. 8?

A. I did not.

Q. Do you find that this map and the workings correspond?

A. Not by the way I found them yesterday.

After hearing Mr. Williams' testimony an opportunity was given to anyone who desired to testify as to any knowledge they had of the accident or any information which had not already been given to the coroner and his jury. No one appearing or even suggesting any other witnesses, the inquest was adjourned until Wednesday, March 4, when the stenographer, having transcribed her notes and sent them to the jury, they met and deliberated and prepared the following verdict which was signed on the 6th of March, 1891.


SLOPE No 8
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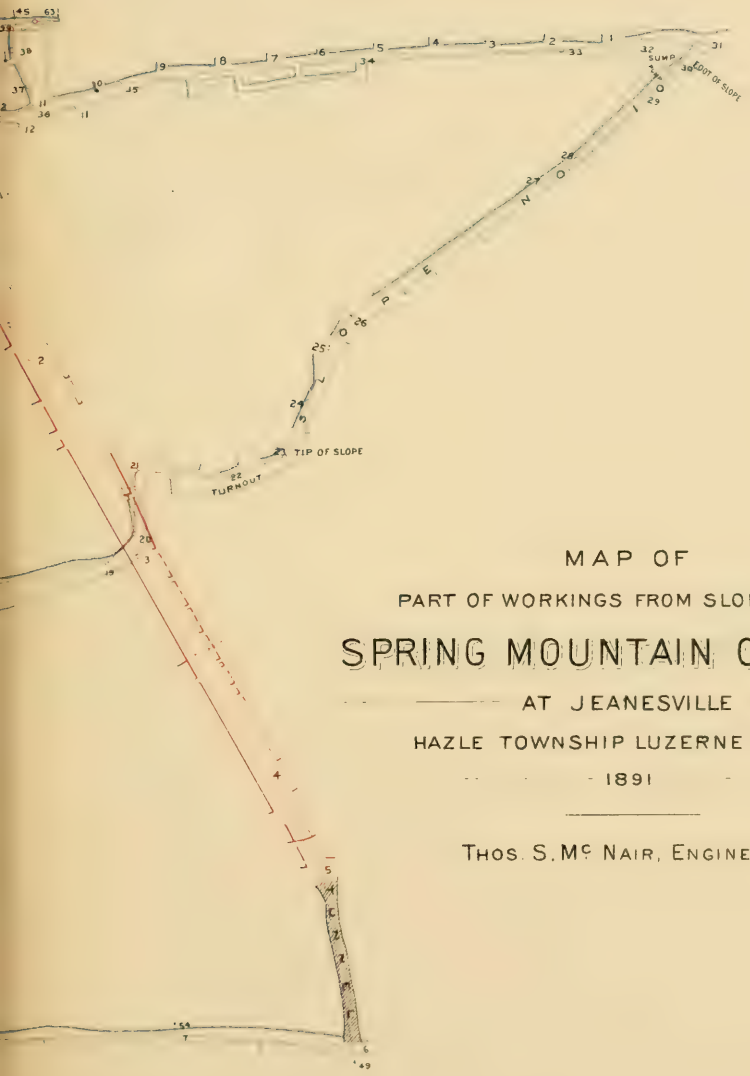


MAP OF

PART OF WORKINGS FROM SLOPES 1 & 8

SPRING MOUNTAIN COLLIERY

AT JEANESVILLE

HAZLE TOWNSHIP LUZERNE CO., PA.

1891

THOS. S. Mc NAIR, ENGINEER.

We the coroner and jurors in this inquisition do say that:—

Deceased were drowned or suffocated at the date (February 4, 1891) or soon thereafter, by a rush of water from an old and abandoned working known as No. 8, at a much higher level, said water having been tapped by a blast by miner Patrick Coll, through a breast No. 11 of No. 10 slope west gangway.

That we find from the evidence that said accident occurred by reason of an incorrect map of said mines, made at some time in the history of the old workings of No. 8, which showed the gangway of the old workings to be about fifty feet shorter than it actually was, and an apparent discrepancy in location of No. 11 breast of No. 10 gangway of forty feet, making an error of ninety feet in the map; thereby permitting breast eleven to be driven directly toward this water; whereas the map showed that the driving up of breast eleven would leave forty feet of a pillar between it and the old workings, viz: No. 8 gangway."

In witness whereof, as well the coroner as the said jurors, have to this inquisition set their hands and seals this sixth day of March, A. D., 1891.

W. W. BUCK,
Coroner of Carbon county.
E. P. WILLIAMS,
Foreman.
J. I. HOLLENBECK,
THOMAS DAUGHERTY,
W. D. THOMAS,
JAMES WEAR,
PHILIP EDWARDS,
Jurors.

The map of the closed survey made under the supervision of Mr. Thomas S. McNair, resident engineer of the Lehigh Valley Railroad Company and Lehigh Valley Coal Company, compared with the map of the workings previons to the disaster, will show how careful the mining engineer should be to have his map accurate and also show good reason for the superintendent and mine foreman to have something more than blind faith in the map furnished by any engineer.

TABLE A. *-Showing the Quantity of Air Circulating through the mines of the Fifth Anthracite District at the close of the year 1891.*

NAME OF COLLIERY.	Name of Operator.	Number of fans employed.	Number of persons employed in the mine per day.	Number of separate splits of the air currents.	Cubic feet of air per minute at the in let.	Cubic feet of air per minute at the face of workings.	Cubic feet of air per minute at the outlet of mine.
Hazleton mine	A. Pardee & Co.	1	122	3	39,930	31,870	37,720
Hazleton mine No. 8	do. do.	1	67	1	40,300	15,600	38,750
Number Three	do. do.	1	105	4	29,800	21,800	30,400
Laurel Hill	do. do.	1	97	4	28,980	26,700	29,600
Number Six	do. do.						
South Sugar Loaf	do. do.		56	3	37,785	17,360	38,765
Cranberry	do. do.	2	135	2	107,500	43,700	105,200
Drifton No. 1	Coxe Brothers & Co.	1	152	6	59,800	47,000	70,000
Drifton No. 2	do. do.	2	130	2	65,540	32,220	67,640
Eckley No. 2	do. do.		48	2	26,100	19,600	27,200
Eckley No. 5	do. do.		57	2	40,400	30,000	39,600
Eckley No. 10	do. do.		59	4	53,200	32,600	51,800
Stockton	do. do.	1	63	5	84,100	34,800	93,400
Beaver Meadow	do. do.	1	42	3	42,420	21,300	74,300
Tomhickon	do. do.	1	120	2	30,100	22,400	30,520
Derringer	do. do.	1	164	7	65,160	34,320	73,960
Gowen No. 1	do do.		64	2	19,470	13,540	21,550
Gowen No. 4	do. do.		57	3	23,225	10,425	25,785
No. 1 colliery	Lehigh Coal and Navigation Company.	3	152	11	85,257	70,920	106,284
No. 4 colliery	do. do. do.	1	154	2	68,100	40,800	73,000
No. 5 colliery	do. do. do.	1	84	2	32,836	26,880	34,580
No. 9 colliery	do. do. do.	1	70	3	51,500	35,600	59,700
Jeddo No. 3	G. B. Markle & Co.	1	89	4	18,100	15,200	22,000
Jeddo No. 4	do. do.		22	2	25,000	11,800	30,000
Highland No. 1	do. do.	1	72	3	28,000	22,100	36,000
Highland No. 2	do. do.	1	79	2	25,300	18,800	34,000
East Sugar Loaf No. 1	Linderman & Skeer.	1	54	4	50,550	40,600	62,940
East Sugar Loaf No. 2	do. do.	1	63	4	35,500	24,800	35,200
East Sugar Loaf No. 5	do. do.	1	108	3	48,500	28,550	48,800
East Sugar Loaf No. 6	do. do.	1	69	2	72,250	14,300	64,600
Humboldt colliery	do. do.	1	90	3	69,550	24,032	70,380
Upper Lehigh No. 5	Upper Lehigh Coal Company.	2	120	4	77,840	36,110	109,935
Upper Lehigh No. 6	do. do.	1	35	1	51,600	17,500	34,600
Upper Lehigh No. 7	do. do.	1	92	2	38,200	21,428	37,400
Spring Mountain No. 1	J. C. Haydon & Co.	1	40	2	28,200	23,550	26,880

Spring Mountain No. 4	do. do.	1	96	3	32,800	22,000	35,400
Sandy Run	M. S. Kemmerer & Co.	3	108	3	53,300	35,286	154,700
Pond Creek	do. do.	1	59	1	29,160	20,070	40,320
Harwood colliery	Pardee Brothers & Co.	1	126	4	49,900	26,000	55,300
Coleraine colliery	W. T. Carter & Co.	‡	44	2	13,600	10,460	14,300
Honey Brook No. 2	Lehigh and Wilkesbarre Coal Company	1	82	6	64,000	38,200	65,600
Beaver Brook	C. M. Dodson & Co.	1	151	4	39,700	19,950	42,100
Milnesville	Milnesville Coal Company	‡	19	2	9,000	6,500	10,800
Hazle Brook	John S. Wentz & Co.	1	52	4	20,440	10,870	19,770
Evans colliery	Evans Mining Company	‡	68	2	15,000	8,000	18,000
Total		42	3,636	130	1,925,293	1,125,541	2,197,279

* Natural. † Loading coal from strippings and robbing pillars. ‡ Heated outlet.

TABLE I.—*Showing Location of Collieries in the Fifth Anthracite District.*

NAME OF COLLIERY.	Name of Operator.	Location—County.	Name of Superintendent.	Postoffice Address.
Hazleton mine	A. Pardee & Co.	Hazleton, Luzerne	Frank Pardee	Hazleton, Pa.
Laurel Hill	do. do.	do. do.	do.	do.
Hazleton No. 3	do. do.	do. do.	do.	do.
Hazleton No. 6	do. do.	do. do.	do.	do.
South Sugar Loaf	do. do.	do. do.	do.	do.
Cranberry	do. do.	do. do.	do.	do.
East Crystal Ridge	do. do.	do. do.	do.	do.
Drifton No. 1	Coxe Brothers & Co.	Drifton, Luzerne	Hon. Eckley B. Coxe	Drifton, Pa.
Drifton No. 2	do. do.	do. do.	do. do.	do.
Eckley No. 2	do. do.	Eckley, Luzerne	do. do.	do.
Eckley No. 5	do. do.	do. do.	do. do.	do.
Eckley No. 10	do. do.	do. do.	do. do.	do.
Stockton	do. do.	Stockton, Luzerne	do. do.	do.
Beaver Meadow	do. do.	Beaver Meadow, Carbon	do. do.	do.
Tomhicken	do. do.	Tomhicken, Luzerne	do. do.	do.
Derringer	do. do.	Derringer, Luzerne	do. do.	do.
Gowen	do. do.	Gowen, Luzerne	do. do.	do.
Colliery No. 1	Lehigh Coal and Navigation Company.	Nesquehoning, Carbon	W. D. Zehner	Lansford, Pa.
Colliery No. 4	do. do.	Summit Hill, Carbon	do.	do.
Colliery No. 5	do. do.	Lansford, Carbon	do.	do.
Colliery No. 6	do. do.	do. do.	do.	do.
Colliery No. 9	do. do.	do. do.	do.	do.
Jeddo No. 3	G. B. Markle & Co.	Jeddo, Luzerne	John Markle	Jeddo, Pa.
Jeddo No. 4	do. do.	do. do.	do.	do.
Highland No. 1	do. do.	do. do.	do.	do.
Highland No. 2	do. do.	do. do.	do.	do.
East Sugar Loaf No. 1	Linderman & Skeer.	Stockton, Luzerne	James E. Roderick	Stockton, Pa.
East Sugar Loaf No. 2	do. do.	do. do.	do. do.	do.
East Sugar Loaf No. 4	do. do.	do. do.	do. do.	do.
East Sugar Loaf No. 5	do. do.	do. do.	do. do.	do.
East Sugar Loaf No. 6	do. do.	do. do.	do. do.	do.
Humbolt colliery	do. do.	Humboldt, Luzerne	do. do.	do.
Upper Lehigh No. 2	Upper Lehigh Coal Company.	Upper Lehigh, Luzerne	A. C. Leisenring	Upper Lehigh, Pa.
Upper Lehigh No. 4	do. do.	do. do.	do.	do.
Spring Mountain No. 1	J. C. Haydon & Co.	Jeanesville, Luzerne	J. C. Haydon, general superintendent.	Jeanesville, Luzerne, Pa.
Spring Mountain No. 4	do. do.	Jeanesville, Luzerne	David Macfarlane, acting superintendent.	do. do.
Lattimer No. 1	Pardee Brothers & Co.	Lattimer, Luzerne	Calvin Pardee, general superintendent.	
Lattimer No. 3	do. do.	do. do.	A. W. Drake, assistant superintendent.	
Hollywood colliery	Calvin Pardee & Co.	Hollywood, Luzerne	Calvin Pardee, general superintendent.	
			A. W. Drake, assistant superintendent.	

Harwood colliery	Pardee Sons & Co.	Harwood, Luzerne.	E. L. Bullock,	Audenried Pa.
Beaver Brook	C. M. Dodson & Co.	Beaver Brook, Luzerne.	John A. Mason,	Milnesville, Pa.
Milnesville colliery	A. S. Van Wickle.	Milnesville, Luzerne.	George John,	Audenried, Pa.
Yorktown colliery	George H. Myers & Co.	Audenried, Carbon.	Walter Leisenring.	Sandy Run, Pa.
Sandy Run	M. S. Kemmerer & Co.	Sandy Run, Luzerne.	do.	do.
Pond Creek	do.	Pond Creek, Luzerne.	do.	do.
Coleraine	Wm. T. Carter & Co.	Beaver Meadow, Carbon.	John Wear,	Beaver Meadow, Pa.
Honey Brook No. 2	Lehigh and Wilkesbarre Coal Company.	Tresckow, Carbon.	Jed I. Hollenbeck,	Audenried, Pa.
Hazle Brook	John S. Wentz & Co.	Hazle Brook, Luzerne.	George Richert,	Hazle Brook, Pa.
Evans colliery	Evans Mining Co.	Beaver Meadow, Carbon.	John D. Evans,	Beaver Meadow, Pa.

TABLE II—*Gives the total number of tons of coal mined in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Fifth Anthracite District for the year ending December 31, 1891.*

NAMES OF COLLIERIES.	Location.	Total Production in Tons of Coal.	Total Shipment in Tons of Coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number pounds dynamite used.
A. Pardee & Co.												
Hazleton Mine	Hazleton	202,630.05	15,780.00	243.5	569	...	9	4,332	48	43	2	
Laurel Hill	do.	109,763.00	102,351.00	252.3	267	1	4	1,370	49	37	1	
Hazleton No. 3	do.	88,035.00	81,635.00	230.4	226	...	3	2,179	30	39	2	72,350
Hazleton No. 6	do.	26,627.00	25,152.00	138.1	88	...	...	395	10	22	...	
South Sugar Loaf	do.	45,020.00	41,780.00	136.0	147	...	3	1,187	28	18	...	
Cranberry	do.	141,284.00	127,284.00	230.1	486	1	8	3,483	47	51	4	
East Crystal Ridge (idle during the year)	do.	...	...	...	...	...	...	...	16	...	...	...
		613,359.05	573,982.00	239.1	1,783	2	27	12,946	228	211	9	72,350
Coxe Bros. & Co.												
Drifton No. 1	Drifton	438,770.11	396,237.12	287.0	807	3	10	7,746	60	107	5	5,300
Drifton No. 2												
Eckley No. 5	Eckley	112,983.07	103,970.07	259.0	201	...	3	1,439	18	21	...	1,400
Eckley No. 10	do.	130,990.04	116,080.09	286.0	278	...	...	2,475	19	37	1	2,094
Stockton	Stockton	145,811.17	126,067.12	274.0	411	2	3	2,852	28	30	1	4,669
Beaver Meadow	Beaver Meadow	134,221.08	111,405.11	285.0	370	1	2	1,675	24	29	1	7,746
Tomhicken	Tomhicken	96,342.05	89,401.03	303.0	221	...	1	2,287	5	35	1	1,714
Derringer	Derringer	345,081.17	326,103.00	295.0	642	3	2	6,193	16	64	5	8,163
Gowen	Gowen				...	...	...	...	...	33	...	...
		1,404,201.09	1,269,265.14	284.3	2,930	9	21	24,667	170	336	14	29,086

Lehigh Coal and Navigation Company.												
Colliery No. 1.	Nesquehoning. . .	236,909.04	236,964.19	238.2	568	2	3	3,060	45	92	5	25,000
Colliery No. 4.	Summit Hill. . . .	62,812.16	64,164.04	115.8	274	1	. . .	300	38	74	. . .	1,350
Colliery No. 5.	Lansford. . . .	129,533.02	124,273.09	219.8	255	1	. . .	1,980	6	35	. . .	4,000
Colliery No. 6.	do. . . .				132	2	. . .	. . .	15	11	2	
Colliery No. 9.	do. . . .	191,553.07	188,267.04	227.5	383	1	. . .	240	12	61	3	4,600
Screen building.	Hanto.	. . . . .	. . . . .	. . .	170	1	. . .	. . .	26	. . .	. . .	. . .
		620,808.09	613,639.16	228.5	1,782	8	3	5,580	142	273	10	34,950
G. B. Markle & Co.												
Jeddo No. 3.	J ddo.	97,727 06	92,195.11	236.0	296	2	3	2,044	32	57	2	10,597
Jeddo No. 4.	do.	115,353.00	108,823.12	244.0	364	. . .	2	1,472	37	69	3	21,182
Highland No. 1.	Highland. . . .	113,063.07	106,663.11	202.0	262	. . .	3	2,347	21	42	. . .	260
Highland No. 2.	do. . . .	119,579.10	112,810.17	200.0	224	1	7	2,419	22	52	. . .	1,867
		445,723.03	420,493.11	220.5	1,146	3	15	8,282	112	220	5	33,906
Linderman & Skeer.												
East Sugar Loaf No. 1.			54,103.13	197.4	242	3	1	1,291	22		1	
East Sugar Loaf No. 2.	Stockton. . . .	346,294.00	80,475.01	246.0	340	1	6	2,695	43	98	1	45,269
East Sugar Loaf No. 4, 5 and 6.			129,796.02	243.3	387	. . .	6	3,817	57		1	
Humboldt. . . .	Humboldt. . . .	94,187.00	74,477.14	203.5	205	. . .	. . .	2,143	36	34	1	2,500
		440,481.00	338,852.10	222.5	1,174	4	13	9,946	158	132	4	47,769
Upper Lehigh Coal Company.												
	Slope No. 1.				. . .	. . .	. . .	. . .	8	. . .	. . .	. . .
	Slope No. 2.				144	1	1	. . .	20	4	1	. . .
	Slope No. 5.				140	1	1	3,474	12	26	1	136
Upper Lehigh Colliery No.	Slope No. 6.	Upper Lehigh. . .	295,468.17	262,120.02	246.8	49	. . .	2	726	8	10		146
	Slope No. 7.				108	. . .	1	1,900	6	22	1	68
	Slope No. 8.				57	. . .	. . .	585	4	3		587
	Shaft.				5	. . .	. . .	72	. . .	. . .	. . .	1,679
Upper Lehigh Slope No. 4.		Upper Lehigh. . .	93,395.10	83,285.00	219.7	157	2	2	1,514	16	32	1	2,181
			388,864.07	345,405.02	233.3	660	4	7	8,271	74	97	4	4,979
J. C. Haydon & Co.												
Spring Mountain No. 1.	Jeanesville. . . .		147,493.05	134,263.05	211.0	401	13	5	1,320	31	45	2	29,451
Spring Mountain No. 4.	do. . . .		157,872.06	142,129.19	228.0	418	1	3	2,760	51	52	2	3,893
			305,365.11	276,423.04	219.5	819	14	8	4,080	82	97	4	33,344
Pardee Bros. & Co.												
Lattimer No. 1.	Lattimer Mines. .		31,171.02	28,338.02	72.5	378	. . .	1	328	37	95	3	8,740
Lattimer No. 3.	do. . . .		205,870.06	187,155.06	235.6	487	1	. . .	1,312	26		3	34,960
			237,041.08	215,493.08	235.6	865	1	1	1,640	63	95	6	43,700
Calvin Pardee & Co.												
Hollywood. . . .	Hollywood. . . .		144,662.16	131,511.16	230.0	409	. . .	1	3,670	34	42	1	44,900
Pardee Sons & Co.												
Harwood Mines. . .	Harwood.		89,437.19	61,445.19	210.2	451	1	3	1,745	51	26	1	2,762
C. M. Dodson & Co.												
Beaver Brook. . . .	Beaver Brook. . .		214,992.17	191,492.17	224.0	449	1	3	4,595	50	45	1	311

TABLE II—*Continued.*

NAME OF COLLIERIES.	Location.	Total Production in Tons of Coal.	Total Shipment in Tons of Coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number of pounds of dynamite used.
A. S. VanWickle.												
Milnesville colliery	Milnesville	226,828.00	208,968.00	226.6	650	3	3	3,752	44	37	2	2,350
George H. Meyers & Co.												
Yorktown colliery	Audenried	141,751.04	127,157.04	245.4	377	1	3	1,698	38	32	3	5,600
M. S. Kemmerer & Co.												
Sandy Run	Sandy Run	121,962.12	113,625 02	243.8	314	. . .	1	2,850	30	45	2	2,100
Pond Creek	Pond Creek	18,022.00	16,799.01	177.4	49	1	. . . .	675	6	6	. . .	. . . . .
		139,984.12	130,424.03	243.8	363	1	1	2,525	36	51	2	2,100
W. T. Carter & Co.												
Coleraine colliery	Beaver Meadow	131,448.00	121,162.00	274.0	346	. . .	. . . .	2,040	35	38	2	1,850
Lehigh and Wilkesbarre Coal Company.												
Honey Brook No. 2	Treskow	111,963.15	110,027.05	233.7	267	. . .	. . . .	2,088	47	26	1	16,919
J. S. Wentz & Co.												
Hazle Brook	Hazle Brook	96,085.18	86,657.19	225.0	320	. . .	. . . .	1,266	16	20	1	. . . . .
Evans Mining Company.												
Evans Colliery	Beaver Meadow	50,965.14	48,464.14	271.7	170	1	. . . .	1,977	3	6	. . .	2,000
Total		5,803,964.07	5,270,767.02	237.1	14,961	53	115	100,768	1,383	1,784	70	378,694

Recapitulation.

A. Pardee & Co.	Hazleton.	613,359.05	573,982.00	239.1	1,783	2	27	12,946	228	211	9	72,350
Coxe Bros. & Co.	Drifton.	1,404,201.09	1,269,265.14	284.3	2,930	9	21	24,667	170	336	14	29,086
Lehigh Coal and Navigation Company.	Lansford.	620,808.09	615,639.16	228.5	1,782	8	3	5,580	142	273	10	34,950
G. B. Markle & Co.	Jeddo.	445,723.03	420,493.11	220.5	1,146	3	15	8,282	112	220	5	33,906
Linderman & Skeer.	Stockton.	440,481.00	338,852.10	222.5	1,174	4	13	9,946	158	132	4	47,769
Upper Lehigh Coal Company.	Upper Lehigh.	388,864.07	345,305.02	233.3	660	4	7	8,271	74	97	4	4,797
J. C. Haydon & Co.	Jeanesville.	305,365.11	276,423.04	219.5	819	14	8	4,080	82	97	4	33,344
Pardee Bros. & Co.	Lattimer Mines.	237,041.08	215,493.08	235.6	865	1	1	1,640	63	95	6	43,700
Calvin Pardee & Co.	Hollywood.	144,662.16	131,511.16	230.0	409	. . .	7	3,670	34	42	1	44,900
Pardee Sons & Co.	Harwood.	89,437.19	61,445.19	210.2	451	1	3	1,745	51	26	1	2,762
C. M. Dodson & Co.	Beaver Brook.	214,992.17	191,492.17	224.0	449	1	3	4,595	50	45	1	311
A. S. VanWickle.	Milnesville.	226,828.00	208,968.00	226.6	650	3	3	3,752	44	37	3	2,350
Geo. H. Myers & Co.	Audenried.	141,751.04	127,157.04	245.4	377	1	3	1,698	58	32	2	5,600
M. S. Kemmerer & Co.	Sandy Run.	139,984.12	130,424.03	243.8	363	1	1	2,525	36	51	2	2,100
W. T. Carter & Co.	Beaver Meadow.	131,448.00	121,162.00	274.0	346	. . .	. . .	2,040	35	38	2	1,850
Lehigh and Wilkesbarre Coal Company.	Tresckow.	111,963.15	110,027.05	233.7	267	. . .	. . .	2,088	47	26	1	16,919
J. S. Wentz & Co.	Hazle Brook.	96,085.18	86,657.19	225.0	320	. . .	. . .	1,266	16	20	1	. . .
Evans Mining Company.	Beaver Meadow.	50,964.14	48,464.14	271.7	170	1	. . .	1,977	3	6	. . .	2,000
Total.	. . .	5,803,964.07	5,270,767.02	237.1	14,961	53	115	100,768	1,383	1,784	70	378,694

TABLE III—*Showing the number of each Class of Employes at each Colliery in the Fifth Anthracite District during the year 1891.*

NAME OF COLLIERIES.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							GRAND TOTAL INSIDE AND OUTSIDE.
	Inside foreman.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside.	
A. Pardee & Co.															
Hazleton Mine	4	158	79	41	33	16	331	1	6	18	126	85	2	238	569
Laurel Hill	3	71	31	21	11	7	144	1	8	19	52	41	2	123	267
Hazleton No. 3	2	48	42	14	16	6	128	1	4	10	60	21	2	98	226
Hazleton No. 5	1	12	20	2	5	2	42	1	3	4	27	11	. . . .	46	88
Hazleton No. 6	1	49	20	4	7	5	86	1	3	8	32	15	2	61	147
South Sugar Loaf	5	134	118	33	32	12	334	1	9	21	52	65	4	152	486
Cranberry															
Totals	16	472	310	115	104	48	1,065	6	33	80	349	238	12	718	1,783
Coxe Bros. & Co.															
Drifton No. 1	9	272	39	126	38	31	515	3	18	31	146	88	6	292	807
Drifton No. 2															
Eckley No. 5	2	46	6	28	7	4	93	2	5	6	60	34	1	108	201
Eckley No. 10	1	60	25	37	12	2	140	2	8	9	81	37	1	138	278
Stockton	2	78	34	44	12	9	179	2	11	12	94	112	1	232	411
Beaver Meadow	2	6	32	95	16	5	157	2	10	14	103	83	1	213	370
Tomhicken	2	72	20	13	8	3	118	2	10	9	53	28	1	103	221
Derringer															
Gowen	7	158	66	100	33	16	380	2	21	18	147	72	2	262	642
Totals	29	692	222	443	126	70	1,582	15	83	99	684	454	13	1,348	2,930
Lehigh Coal and Navigation Company.															
Colliery No. 1	3	137	54	68	32	18	315	2	9	28	102	112	. . . .	253	568
Colliery No. 4	1	56	2	65	33	10	157	1	4	15	52	45	. . . .	117	274
Colliery No. 5	1	62	18	28	14	4	127	1	5	4	62	56	. . . .	128	255
Colliery No. 6	2	53	15	22	11	3	106	. . . .	2	6	. . . .	18	. . . .	26	132
Colliery No. 9	1	98	40	56	21	5	221	1	7	17	66	74	. . . .	162	383
Hanto screen building	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	1	2	9	82	76	. . . .	170	170
Totals	8	406	132	239	101	40	926	6	29	79	364	378	. . . .	856	1,782

G. B. Markle & Co.															
Jeddo No. 3.	1	43	9	40	25	12	130	1	7	12	47	93	6	166	296
Jeddo No. 4.	1	30	11	55	22	10	129	1	8	22	47	151	6	235	364
Highland No. 1.	1	65	40	17	17	14	154	1	7	8	40	46	6	108	262
Highland No. 2.	1	43	35	19	20	9	127	1	7	17	25	41	6	97	224
Totals.	4	181	95	131	84	45	540	4	29	59	159	331	24	606	1,146
Lindermuth & Skeer.															
East Sugar Loaf No. 1.	1	49	30	40	14	4	138	1	3	9	47	44		104	242
East Sugar Loaf No. 2.	1	63	59	68	16	4	211	1	3	13	50	55	7	122	333
East Sugar Loaf Nos. 4, 5 and 6.	2	115	64	26	18	5	228	2	5	16	59	77		166	394
Humboldt.	1	48	37	21	10	5	122	1	5	9	26	42		83	205
Totals.	5	273	190	155	58	18	699	5	16	47	182	218	7	475	1,174
Upper Lehigh Coal Company.															
Slope No. 2.								1	8	10	84	34	7	144	144
Slope No. 5.	1	44	41	19	18	1	124		2	8		6		16	140
Slope No. 6.	1	12	13	5	8	1	40		2	5		2		9	49
Upper Lehigh Colliery No. 2. Slope No. 7.	1	37	37	4	13	4	96		2	8		2		12	108
Slope No. 8.	1	22	19	3	4	1	50		1	4		2		7	57
Shaft.		1	2				3			1		1		2	5
Upper Lehigh slope No. 4.	1	30	37	8	16	1	93	1	3	11	22	27		64	157
Totals.	5	146	149	39	59	8	406	2	18	47	106	74	7	254	660
J. C. Haydon & Co.															
Spring Mountain No. 1.	2	44	49	38	30	5	168	1	10	11	48	159	4	233	401
Spring Mountain No. 4.	2	53	59	26	24	6	170	1	11	11	52	169	4	248	418
Totals.	4	97	108	64	54	11	338	2	21	22	100	328	8	481	819
Pardee Bros. & Co.															
Lattimer No. 1.	2	8	49	6	4	3	72	3	14	11	142	128	8	306	378
Lattimer No. 3.	2	8	136	9	15	5	175	2	5	14	152	139		312	487
Totals.	4	16	185	15	19	8	247	5	19	25	294	267	8	618	865
Calvin Pardee & Co.															
Hollywood colliery.	1	25	76	14	16	1	133	2	19	16	85	150	4	276	409
Pardee Sons & Co.															
Slope No. 1.	1	14	12	17	3	1	48								48
Harwood colliery. Slope No. 2.	1	25	24	17	2	1	70	1	7	19	115	32	6	180	70
Slope No. 4.	1	16	16	11	2		46								46
Slope No. 5.	1	36	32	32	4	2	107								287
Totals.	4	91	84	77	11	4	271	1	7	19	115	32	6	180	451
C. M. Dodson & Co															
Beaver Brook.	1	79	84	23	17	9	213	1	10	24	82	112	7	236	449

TABLE III—*Continued.*

NAME OF COLLERIES.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand total inside and outside.
	Inside foreman.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside.	
A. S. Van Wickle.															
Milnesville	1	38	14	25	4	....	82	5	14	31	73	441	4	568	650
George H. Myers & Co.															
Yorktown	2	54	64	36	10	2	168	1	8	18	121	57	4	209	377
M. S. Kemmerer & Co.															
Sandy Run	1	62	64	18	14	12	171	3	5	16	65	51	3	143	314
Pond Creek	1	20	12	2	4	2	41	....	1	3	....	4	....	8	49
Totals	2	82	76	20	18	14	212	3	6	19	65	55	3	151	363
W. T. Carter & Co.															
Coleraine	2	39	78	58	24	3	204	2	4	16	49	68	3	142	346
Lehigh and Wilkesbarre Coal Company.															
Honey Brook No. 2	1	40	21	63	10	1	136	1	6	18	51	54	1	131	267
John S. Wentz & Co.															
Hazle Brook	2	52	21	61	15	5	156	1	4	11	75	70	3	164	320
Evans Mining Company.															
Evans colliery	2	56	26	3	8	1	96	1	2	6	31	31	3	74	170
Grand totals	93	2,839	1,935	1,584	738	288	7,474	63	328	636	2,985	3,358	117	7,487	14,961

Recapitulation.

A. Pardee & Co.	16	472	310	115	104	48	1,065	6	33	80	349	238	12	718	1,783
Coxe Bros. & Co.	29	692	222	443	126	70	1,582	15	83	99	684	454	13	1,348	2,930
Lehigh Coal and Navigation Company	8	406	132	239	101	40	926	6	29	79	364	378	. . .	856	1,782
G. B. Markle & Co.	4	181	95	131	84	45	540	4	29	59	159	331	24	606	1,146
Linderman & Skeer	5	273	190	155	58	18	699	5	16	47	182	218	7	475	1,174
Upper Lehigh Coal Company	5	146	149	39	59	8	406	2	18	47	106	74	7	254	660
J. C. Haydon & Co.	4	97	108	64	54	11	338	2	21	22	100	328	8	481	819
Pardee Bros. & Co.	4	16	185	15	19	8	247	5	19	25	294	267	8	618	865
Calvin Pardee & Co.	1	25	76	14	16	1	133	2	19	16	85	150	4	276	409
Pardee Sons & Co.	4	91	84	77	11	4	271	1	7	19	115	32	6	180	451
C. M. Dodson & Co.	1	79	84	23	17	9	213	1	10	24	82	112	7	236	449
A. S. Van Wickle	1	38	14	25	4	. . .	82	5	14	31	73	441	4	568	650
George H. Myers & Co.	2	54	64	36	10	2	168	1	8	18	121	57	4	209	377
M. S. Kemmerer & Co.	2	82	76	20	18	14	212	3	6	19	65	55	3	151	363
W. T. Carter & Co.	2	39	78	58	24	3	204	2	4	16	49	68	3	142	346
Lehigh and Wilkesbarre Coal Company	1	40	21	63	10	1	136	1	6	18	51	54	1	131	267
J. S. Wentz & Co.	2	52	21	61	15	5	156	1	4	11	75	70	3	164	320
Evans Mining Company	2	56	26	3	8	1	96	1	2	6	31	31	3	74	170
Grand totals	93	2,839	1,935	1,581	738	288	7,474	63	328	636	2,985	3,358	117	7,487	14,961

TABLE IV.—*List of Fatal Accidents occurring in the Mines of the Fifth Anthracite District for the year ending December 31, 1891.*

Date of accident.	No. of accident.	NAME OF PERSON.	Occupation.	Age.	Widows.	No. of orphans.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
Jan. 23.	1	Waldie Petchenzski. . .	Miner.	29	1	2	East Sugar Loaf No. 1. .	Stockton, Luzerne. . . .	Asphyxiated by carburretted hydroden gas in the top of a finished breast where he went to rap to a party in a cross heading to breast from upper level gangway.
Feb. 4.	2	Edward Gallagher. . . .	Miner.	44	1	2	Spring Mountain No. 1 colliery; the accident occurred in an inside slope in the Wharton vein known locally as No. 10 slope.	Jeanesville, Luzerne. . .	These nine men were drowned by water from the abandoned workings of No. 8 slope, which workings were broken into by a breast from No. 10 slope workings.
4.	3	Patrick Kelly.	Laborer, ...	28	S.	. .			
4.	4	James Ward, ...	Miner.	45	1	4			
4.	5	Samuel Porter, ...	Laborer, ...	24	S.	. .			
4.	6	Michael Polish.	Laborer, ...	58	S.	. .			
4.	7	Bernard McCloskey. . .	Miner.	30	S.	. .			
4.	8	James Griffiths, ...	Bottom man. . .	46	1	1			
4.	9	Joseph Orsock, ...	Laborer, ...	26	S.	. .			
4.	10	Thomas Geke.	Laborer.	26	1	. .			
4.	11	Henry Ball, ...	Miner.	42	1	7	Spring Mountain No. 1; No. 10 slope; Wharton vein.	Jeanesville, Luzerne. . .	These four men were closed in by the water from No. 8 slope in a breast; and were asphyxiated by coal gas from a fire they started and which burned the oxygen out of the compressed air in which they were enclosed by the water.
4.	12	Lawrence Reed.	Miner.	45	1	7			
4.	13	James Balack, ...	Laborer. . . .	28	S.	. .			
4.	14	Michael Smith.	Laborer. . . .	27	S.	. .			
12.	15	Irvin Heckler.	Outside driver. .	16	S.	. .	Upper Lehigh No. 2. . . .	Upper Lehigh, Luzerne. .	Run over by the slate car while unhitching his mule while the car was in motion.
13.	16	Andrew Hudock.	Slate picker. . .	19	S.	. .	Derringer breaker.	Derringer, Luzerne. . . .	Fatally injured by slipping into rolls; was away from his working place; died February 14.
March 7.	17	John Haluskra.	Oiler.	25	S.	. .	Hanto screen building. .	Hanto, Carbon.	While at work his clothing caught on a set screw of a shaft and he was pulled on and whirled around and striking a timber was killed.
9.	18	Martin Leonard.	Outside laborer.	33	1	2	Stripping of Lattimer No. 3.	Lattimer mines, Luzerne.	Killed instantly; head crushed by a fall of frozen clay which caught him between it and the steam shovel.
14.	19	Joseph Orshulack. . . .	Outside plane bottom man.	25	S.	. .	Stockton breaker.	Stockton, Luzerne. . . .	Stepped in front of moving loaded cars which he did not see. Died of his injuries March 16, at the Drifton hospital.
20.	20	Anthony Malofski. . . .	Laborer.	19	S.	. .	East Sugar Loaf No. 1. .	Stockton, Luzerne. . . .	Instantly killed; squeezed between gangway collar and top cross-pieces of empty mine car.

	23.	21	John Cannon.	Miner.	35	S.	. .	Evans colliery.	Beaver Meadow, Carbon. .	Fatally injured by clod, which he and his partner together had tried to bar down, falling on him as he sat under it; died same day at State hospital.
	25.	22	Andrew Gawalla. . . .	Outside laborer.	46	1	. .	Upper Lehigh No. 4. . . .	Upper Lehigh, Luzerne. .	Skull fractured; raised the bridge before the car had passed over it, and the weight of the car caused him to let go of the windless which struck him. Died of his injuries April 7.
	30.	23	John Lamb.	Inside driver. .	23	S.	. .	Colliery No. 5.	Lansford, Carbon. . . .	Right limb fractured and internal injuries from falling under moving car while unhitching his mule. Died March 31 at the Ashland hospital.
April	21.	24	Patrick Gaffney. . . .	Conveyor tender.	14	S.	. .	Highland No. 2 breaker. .	Highland, Luzerne. . .	Killed by falling into the conveyor in some way and being crushed by it.
	23.	25	John Kearney.	Miner.	38	1	7	East Sugar Loaf No. 1. .	Stockton, Luzerne. . .	Fatally injured by flying rock from a shot which exploded just as he got back, expecting it had missed. Died at State hospital April 25.
	28.	26	Peter Scarnba.	Laborer. . . .	29	1	2	Beaver Meadow.	Beaver Meadow, Carbon.	Killed by a fall of dividing rock in Wharton vein.
May	8.	27	Hugh Sharpe.	Miner.	30	S.	. .	Colliery No. 4.	Summit Hill, Carbon. . .	Suffocated in trying to reach the hoisting slope after mine was on fire. Body recovered July 10, nine weeks after accident.
	21.	28	Philip Imre.	Miner.	26	1	. .	Derringer.	Derringer, Luzerne. . .	Killed by slate which fell on him while he was barring coal out from under it.
June	8.	29	John Schvirchick. . . .	Laborer. . . .	48	1	3	Yorktown No. 9.	Audenried, Carbon. . .	Fatally injured by a fall of top coal; was employed in robbing pillars. Died same day.
	9.	30	Michael Maloney. . . .	Outside laborer.	22	S.	. .	Milnesville.	Milnesville, Luzerne. . .	Fatally injured by a piston head which he and another person were carrying on a bar falling on him. Died same day.
	27.	31	Thomas Gillespie. . . .	Miner.	55	1	1	Jeddo No. 3.	Jeddo, Luzerne.	Killed by a fall of top coal under which he was working knowing it was unsafe.
July	10.	32	George Koch.	Pump-boy. . . .	15	S.	. .	Laurel Hill.	Hazleton, Luzerne. . . .	Killed by falling down the man-slope either off the car or being struck by it while walking up the slope.
	18.	33	John Brogan.	Miner.	36	1	4	Pond Creek.	Pond Creek Luzerne. . .	Killed by a fall of clod which he neglected to take down after being ordered to.
	25.	34	Fritz Buller.	Driver.	19	S.	. .	Colliery No. 1, No. 3 slope.	Nesquehoning, Carbon. .	Killed by flying rock from a runaway car on slope caused by chain breaking.
	30.	35	John Trevena.	Miner.	33	1	4	Colliery No. 1, Tunnel No. 1.	Nesquehoning, Carbon. .	Killed by explosion of dynamite while preparing the powder for a blast in rock.
Aug.	6.	36	Peter McMenamin. . .	Roll feeder. . .	17	S.	. .	Drifton breaker.	Drifton, Luzerne. . . .	Fatally injured by slipping into the rolls by stepping into chute. Died same day.
	11.	37	James McHugh.	Laborer. . . .	26	1	1	No. 3 slope, Colliery No. 9.	Summit Hill, Carbon. . .	Instantly killed by gangway collar breaking and crushing him under the falling mass.
	17.	38	Bernard White.	Miner.	25	S.	. .	Derringer.	Derringer, Luzerne. . .	Injured by top coal falling on him while barring after a blast. Died very unexpectedly August 28.
	24.	39	John McMenamin. . . .	Miner.	42	1	. .	Stockton.	Stockton, Luzerne. . .	Killed by clod which fell while he was re-standing a discharged prop under it.
	7.	40	Frank Lapinsky. . . .	Timber-man. . .	39	S.	. .	Drifton No. 2.	Drifton, Luzerne. . . .	Killed by clod which fell while he was under it preparing to set props to support it.

13-12-91.

TABLE IV- *Continued.*

Date of accident.	No. of accident.	NAME OF PERSON.	Occupation.	Age.	Widows.	No. of orphans.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
Sept. 19.	41	Andrew Kowatz.	Screen room foreman.	45	1	2	Cranberry breaker.	Hazleton, Luzerne. . . .	Skull fractured; caught between screen and building while assisting to repair screen. Died of injuries September 21.
25.	42	Thomas Rhoda.	Assistant road-man.	22	S.	. .	Upper Lehigh No. 4. . . .	Upper Lehigh, Luzerne. .	Fatally injured; struck by the loose end of a curved railroad iron which a team was hauling, when he stood against a prop. Died twelve hours later.
23.	43	Myles Rhorerty.	Miner.	29	1	1	Spring Mountain No. 4. .	Jeanesville, Luzerne. . .	Killed instantly by a fall of clod.
Oct. 2.	44	Joseph Motsy.	Timber-man. .	33	1	2	East Sugar Loaf No. 2. .	Stockton, Luzerne. . . .	Fatally scalded by breaking a steam pipe by letting a timber he was chopping out fall on it. Died at hospital same day.
21.	45	Peter Hill.	Miner.	33	1	5	Colliery No. 6.	Lansford, Carbon.	These men were charging a rockhole with dynamite when it exploded, killing Hill and injuring Eberts so severely that he died two and one-half hours after the accident.
21.	46	William Eberts.	Laborer.	24	S.	. .	do.	do.	
23.	47	John Checora.	Outside laborer.	42	S.	. .	Beaver Brook breaker. . .	Beaver Brook, Luzerne. .	Suffocated in Buckwheat coal pocket; while shoveling coal; did not heed signal, and was drawn down into coal as it ran out into railroad cars.
29.	48	Paul Matlas.	Miner.	35	S.	. .	Harwood slope No. 2. . .	Harwood, Luzerne. . . .	Spinal column fractured by top clod which fell on him while engaged in fileing a drill under it. Died of his injuries at State hospital, November 7.
Nov. 12.	49	John Kentos.	Slate picker. . .	23	S.	. .	Jeddo No. 3.	Jeddo, Luzerne.	Fatally injured; scalded, burned and struck by a piece of casting from an exploding boiler. Died same day.
16.	50	Jacob Kulock.	Laborer.	33	1	3	Upper Lehigh No. 5. . . .	Upper Lehigh, Luzerne. .	Killed by a fall of top coal, under which he went against the orders of his miner.
17.	51	John Andrew.	Outside laborer.	44	1	2	Milnesville stripping. . .	Milnesville, Luzerne. . .	Killed by a fall of coal from the side of stripping, while engaged in drilling hole in bottom coal.
19.	52	Michael Moron.	Outside laborer.	35	1	2	Milnesville stripping. . .	Milnesville, Luzerne. . .	Skull fractured by falling off trestling. Died at hospital, November 24.
Dec. 25.	53	Anton Novak.	Laborer.	22	S.	. .	Drifton No. 2.	Drifton, Luzerne. . . .	Killed; head crushed between derailed car and prop while assisting to replace the car on track.
				25		64			

Recapitulation.

Occupation.	Number.	Per cent.
Miners	18	33.9
Mine laborers	14	26.4
Timber men	2	3.8
Roadmen	1	1.9
Mine bottom men	1	1.9
Mine drivers	2	3.8
Screen room foremen	1	1.9
Outside bottom men	1	1.9
Outside laborers	6	11.3
Outside drivers	1	1.9
Roll feeders	1	1.9
Conveyor tenders	1	1.9
Oilers of machinery	1	1.9
Pump runners	1	1.9
Slate pickers	2	3.7
Totals	53	100

Nationality.	Number.	Per cent.
Hungarian	15	28.3
Irish	13	24.5
Polish	9	17.0
American	7	13.2
English	3	5.6
Welsh	2	3.8
Scotch	1	1.9
German	1	1.9
Austrian	1	1.9
Italian	1	1.9
Totals	53	100

Causes of Accident.	Number.	Per cent.
By falls of coal, roof and sides	14	26.4
By water breaking in from old workings	9	17.0
Asphyxiated by gases	6	11.3
By cars inside and on surface	6	11.3
By machinery inside and on surface	5	9.4
By blasts and explosions of powder	4	7.6
By falls of coal or clay on strippings	2	3.8
By falling down slopes	1	1.9
By boiler explosions	1	1.9
By miscellaneous causes inside and on surface	5	9.4
Totals	53	100

TABLE V—*List of Non-Fatal Accidents occurring in the Mines of the Fifth Anthracite District for the year ending December 31, 1891.*

Date of accident.	Number of accident.	NAME OF PERSON.	Occupation.	Age.	Married or single.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
Jan. 2.	1	Malcolm Ferguson.	Mine loco. helper.	17	S.	Cranberry.	Hazleton, Luzerne.	Limb crushed between cars while coupling them.
9.	2	Edward Hammer.	Door boy.	15	S.	Drifton No. 2.	Drifton, Luzerne.	Limb broken; caught between derailed car and pillar.
9.	3	Matthew Elliott.	Miner.	48	M.	Cranberry.	Hazleton, Luzerne.	Wrist badly gashed by coal breaking in his hands while loading.
12.	4	Frank Bartochevick.	Laborer.	36	S.	Upper Lehigh No. 5.	Upper Lehigh, Luzerne.	Limb fractured below knee, nose broken and large scalp wound; caused by a fall of coal in gangway.
13.	5	Hugh Scott.	Miner.	40	M.	Hazleton No. 3.	Hazleton, Luzerne.	Seriously crushed about the body by a fall of coal that covered him in his breast.
14.	6	George Silks.	do.	30	M.	Drifton No. 2.	Drifton, Luzerne.	Both these men were burned on face and hands by an explosion of gas ignited by Kellert's naked light, and Kellert was bruised by falling down the manway from the force of explosion.
14.	7	Augsut Kellert.	do.	32	M.			
14.	8	John Kuryplach.	Laborer.	29	M.	Hollywood stripping.	Hollywood, Luzerne.	Rib fractured by rock rolling down bank and striking him.
15.	9	Charles Watkins.	Driver.	16	S.	Highland No. 2.	Highland, Luzerne.	Ankle sprained; caught between a derailed car and a prop.
23.	10	Richard Guscot.	Miner.	55	M.	Stockton.	Stockton, Luzerne.	Ankle and small bone of leg fractured by a fall of top coal in his working place.
27.	11	John Hammard.	Laborer.	28	M.	Upper Lehigh No. 7.	Upper Lehigh, Luzerne.	Back badly gashed by falling in coming down his breast, which only pitched ten degrees.
27.	12	Michael Deagan.	Miner.	40	M.	Highland No. 2.	Highland, Luzerne.	Ribs fractured and body contused by fall of coal and clay.
28.	13	Frank Ongrest.	Outside laborer.	46	M.	Milnesville stripping.	Milnesville, Luzerne.	Foot fractured and body bruised; squeezed between cars.
29.	14	John Vizvarre.	do.	20	S.	do. do.	do. do.	Body seriously bruised; squeezed between cars.
30.	15	Michael Wargi.	do.	43	S.	Hollywood stripping.	Hollywood, Luzerne.	Compound fracture of limb by rock from blast striking him. Died at hospital during February, 1891, on account of his constitution being broken by drink.
31.	16	Jacob Radka.	Laborer.	23	S.	Harwood stripping.	Harwood, Luzerne.	Compound fracture of left limb by fall of clay on stripping crushing him against car.
Feb. 6.	17	George Goleash.	Outside laborer.	29	S.	Upper Lehigh No. 2.	Upper Lehigh, Luzerne.	Limb fractured by a log rolling on him.
20.	18	Gomer Roberts.	Miner.	40	M.	Colliery No. 1.	Nesquehoning, Carbon.	These men were injured by an explosion of powder while reopening a hole that had missed fire; fortunately neither seriously.
20.	19	John Fredorn.	Laborer.	25	M.			
20.	20	Thomas C. Edwards.	Miner.	30	M.			

Feb. 21,	21	John Ondeck,	do.	35	M.	Highland No. 2,	Highland, Luzerne,	Head and hands burned by explosion of gas; disobeyed orders.
24,	22	Joseph Hoistrick,	do.	27	M.	Derringer,	Derringer, Luzerne,	Face and left hand burned by gas; went to his work without seeing the fire boss.
27,	23	William Brogan,	Driver,	23	S.	Highland No. 1,	Highland, Luzerne,	Right limb fractured below knee; caught between car and plank in the middle of track, placed there by himself.
Mar. 6,	24	Joseph Zagurski,	Miner,	29	S.	East Sugar Loaf No. 1,	Stockton, Luzerne,	Severely bruised by coal from a blast; he stayed in the manway instead of retreating to the crop heading.
9,	25	Eldy Hawk,	Outside laborer,	19	S.	Drifton breaker,	Drifton, Luzerne,	Right limb fractured; run over by empty car on the outside plane to the breaker.
11,	26	James Bell,	Miner,	30	S.	Drifton No. 2,	do.	Face and hands burned by an explosion of gas; struck a feeder while driving his crop heading.
14,	27	Herman Ratz,	do.	40	M.	Cranberry,	Hazleton, Luzerne,	Both limbs fractured below the knees by a fall of coal from pillar which he was robbing out.
16,	28	Charles Damback,	do.	40	M.	Hazleton No. 3,	do. do.	Clavicle fractured by fall of slate which he was engaged in barring down in his gangway.
17,	29	William Walker,	Stripping boss,	38	M.	Spring Mountain No. 1,	Jeanesville, Luzerne,	Jaw bone fractured; struck by a stone flying from blast
21,	30	John S. Thomas,	Miner,	43	S.	Laurel Hill,	Hazleton, Luzerne,	Right scapula fractured; caught by a rush of coal at battery
24,	31	John Powell,	Laborer,	22	M	Jeddo No. 4,	Jeddo, Luzerne,	Jaw bone fractured; struck by coal at chute while loading car.
24,	32	Michael Leshley,	Outside laborer,	35	M.	Sandy Run,	Sandy Run, Luzerne,	Limb fractured below knee; foot caught between planks at the head of stripping plane while unhitching rope from plane.
25,	33	John McGrath,	Driver,	18	S.	Spring Mountain No. 1,	Jeanesville, Luzerne,	Injured slightly; squeezed between car and prop.
25,	34	Henry Ullman,	Miner,	50	S.	East Sugar Loaf No. 6,	Stockton, Luzerne,	Right limb badly bruised below knee by a fall of coal.
Apr. 6,	35	Andro Dill,	Laborer,	33	M.	East Sugar Loaf No. 2,	do.	Body squeezed between car and prop near foot of slope while trying to get into the car before it reached the bottom of slope.
12	36	William Tarchner,	Roadman,	50	M.	Eckley No. 5,	Eckley, Luzerne,	Right limb fractured by a curved "T" rail, which he was straightening, breaking and falling on him.
14,	37	Patrick Murray,	Miner,	48	M.	Upper Lehigh No. 4,	Upper Lehigh, Luzerne,	Scalp lacerated, back and hip badly bruised by a fall of coal and clay while robbing pillars.
22,	38	Andrew Lazzor,	do.	32	M.	Beaver Brook,	Beaver Brook, Luzerne,	Hips sprained by a fall of top coal while he was engaged in barring at it; more came down than he expected.
28,	39	Daniel McLaughlin,	do.	53	S.	Beaver Meadow,	Beaver Meadow, Carbon,	Back injured slightly by fall of dividing rock, which killed his laborer, Peter Scranba.
May 4,	40	James Reed,	Laborer,	18	S.	Upper Lehigh No. 6,	Upper Lehigh, Luzerne,	Left limb fractured below knee, fourth and fifth ribs on left side fractured and back badly lacerated by a fall of top coal, which broke down between the props.
4,	41	James Mulhearn,	Miner,	35	M.	East Sugar Loaf No. 6,	Stockton, Luzerne,	These two men were partners, and drilled two holes, but having but one blasting barrel they fired one hole and Mulhearn soon tried to go up the manway, but finding the stife too strong, returned through cross cut to next breast to where Brennan was on the manway and both were precipitated down the manway and seriously injured, Brennan being the worse.
4,	42	Frank Brennan,	do.	23	S.			

TABLE V—*Continued*

Date of accident.	No. of accident.	NAME OF PERSON.	Occupation.	Age.	Married or single.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
May 5.	43	Conrad Shade. . . .	Bottom man. . .	25	M.	South Sugar Loaf.	Hazleton, Luzerne. . . .	Seriously injured about the head; kicked by a mule.
14.	44	Morgan McShea. . . .	Miner.	50	M.	Beaver Brook.	Beaver Brook, Luzerne.	Back seriously injured by a fall of bony coal while he was barring loose coal under it after a shot.
June 2.	45	Stephen Galata. . . .	Miner.	30	M.	Drifton No. 1.	Drifton, Luzerne.	Seriously injured by fall of top rock.
12.	46	Albert Reed.	Water boy. . . .	14	S.	Spring Mountain stripping.	Jeanesville, Luzerne. . .	Foot crushed between road sill and locomotive bumper on which he was riding.
18.	47	Arthur Walker. . . .	Laborer.	28	S.	Spring Mountain No. 4. . .	Jeanesville, Luzerne. . .	Foot and arm hurt by coal falling from top and side of gangway.
July 2.	48	Frank Reed.	Water boy. . . .	16	S.	Spring Mountain stripping.	Jeanesville, Luzerne. . .	Limbs slightly injured; thrown from mine locomotive while he was riding on the bumper of same.
10.	49	Henry Johnson. . . .	Loco. engineer. .	22	S.	Beaver Meadow.	Beaver Meadow, Carbon.	Burned about face and hands; keg of powder exploded on one of the cars of trip he was hauling with locomotive.
10.	50	Edward Hagley. . . .	Fireman.	45	M.	Beaver Meadow.	Beaver Meadow, Carbon.	Face badly scalded by steam; plug stuck, he removed the nut and struck plug with hammer and it blew out.
13.	51	Christian Wetteran. .	Stripping foreman.	60	M.			
13.	52	George Wossermaw. .	Stripping laborer.	35	M.	Hazleton Mine stripping. .	Hazleton, Luzerne. . . .	These men were all engaged in tamping a hole charged with a large quantity of Judson powder, when it exploded injuring them all slightly except Geppert who is permanently disabled by the loss of his eyesight.
13.	53	Peter Tarko	do. do.	40	M.			
13.	54	Andrew Geppert. . . .	do. do.	40	M.			
14.	55	James Badcock. . . .	Laborer.	18	S.	Upper Lehigh No. 6. . . .	Upper Lehigh, Luzerne.	Left arm fractured of falling while running along gangway.
15.	56	Rossa Matchall. . . .	Outside laborer.	40	M.	Spring Mountain stripping.	Jeanesville, Luzerne. .	Limb injured by being struck by a piece of coal.
21.	57	Alex. Cohonsky. . . .	do. do.	38	M.	Upper Lehigh stripping No. 4.	Upper Lehigh, Luzerne.	Right limb fractured below knee by a fall of clay.
21.	58	Michael Sanko.	do. do.	39	S.	Hollywood stripping. . . .	Hollywood, Luzerne. . .	Thigh fractured; caught between car and chute.
24.	59	Hugh McMonigle. . .	Slate picker. . . .	12	S.	Jeddo No. 3 breaker. . . .	Jeddo, Luzerne.	Skull fractured, left limb fractured also below knee, fell from trestling onto railroad cars by railing breaking while playing around during dinner hour.
24.	60	Patrick Brennan. . .	Driver.	18	S.	Highland No. 2.	Highland, Luzerne. . . .	Arm and limb bruised; fell between the rails and the car passed over him, while trying to get on same.

29.	61	Adam Deist.	do.	17	.	Hazleton mine, ...	Hazleton, Luzerne, . . .	Body bruised; squeezed between car and platform.
31.	62	David Hughes, ...	do.	18	S.	Jeddo No. 4.	Jeddo, Luzerne. . . .	Seriously injured; gash over eye and bone injured by being kicked by his mule while taking it out of the stable in the morning.
31.	63	Patrick Sharp 3d. . .	Miner.	33	M.	Jeddo No. 3.	Jeddo, Luzerne.	Neck burned by an explosion of powder caused by a spark from his lamp, while preparing cartridge for blast.
Aug. 7.	64	John Oswold.	Driver.	19	.	Hazleton mine, ...	Hazleton, Luzerne . . .	Lost one arm and the thumb and two fingers of other hand by being thrown under the cars by striking the top of a door while passing through it.
13.	65	Sabon Potford.	Outside laborer. .	23	S.	Hazleton mine, ...	Hazleton, Luzerne. . . .	Limb bruised; caught between truck and door-frame at breaker.
19.	66	Peter Swalick.	Laborer.	36	S.	East Sugar Loaf No. 2. . .	Stockton, Luzerne. . . .	Limb fractured; attempted to get on car in the dark, on the slope, while in motion, after signal had been given.
20.	67	Thomas Brogan. . . .	Door boy.	17	S.	Drifton No. 2.	Drifton, Luzerne.	Left arm fractured, and back injured by falling off and under a car which was being pulled out of a dip.
27.	68	Joseph Gallagher. . .	Miner.	35	M.	Highland No. 2.	Highland, Luzerne. . . .	Shoulder dislocated; stumbled and fell down the manway.
27.	69	Simon Brezinsky. . .	do.	42	M.	Drifton No. 1.	Drifton, Luzerne. . . .	Three ribs fractured; was pulling coal off platform into car with pick, his hold slipped and he fell into car.
27.	70	Adam Adamshick. . .	Slate picker. . . .	14	S.	Hollywood breaker. . . .	Hollywood, Luzerne. . .	Squeezed between locomotive and empty mine cars at breaker while away from his own work.
27.	71	George Casper. . . .	Outside laborer. .	20	S.	Hollywood.	Hollywood, Luzerne. . .	Squeezed between loaded mine cars; no bones fractured.
27.	72	Henry Smith.	Timbermen. . . .	39	M.	Drifton No. 2.	Drifton, Luzerne. . . .	Left Limb fractured by clod which fell while he was preparing to prop it. Frank Sapinsky was killed by the same fall. Smith was in charge of timber gang.
Sept. 7.	73	John Goage.	Laborer.	24	S.	Hollywood.	Hollywood, Luzerne. . .	Shoulder dislocated and body bruised; caught between car and rib of gangway, while at his work.
8.	74	John Ondecko. . . .	Car oiler, ...	20	S.	Eckley No. 5, ...	Eckley, Luzerne. . . .	Both these men were slightly injured by coal and flying pieces of a runaway car on slope; caused by chain breaking.
8.	75	John Stasko 2d. . . .	Bottom man. . . .	22	S.			
11.	76	Dennis Dougherty. . .	Miner.	45	M.	Hazleton mine.	Hazleton, Luzerne, . . .	Face, neck and hands burned by an explosion of gas brought down to his naked light by top coal which was dislodged in putting in manway.
14.	77	Andrew Raskin. . . .	Miner, ...	35	M.	South Sugar Loaf, ...	Hazleton, Luzerne, . . .	Head, arm and back cut; caught by a fall of coal.
15.	78	John Miskoriski. . . .	Laborer.	29	S.	Spring Mountain No. 4. . .	Jeanesville, Luzerne. . .	Foot badly contused; caught between a fall of roof clod and loose coal in his working place.
19.	79	Joseph Hooda.	do.	41	S.	Hollywood.	Hollywood Luzerne. . .	Arm fractured; piece of roof rock fell and struck him.
24.	80	John Brislin.	Miner.	50	M.	East Sugar Loaf No. 2. . .	Stockton, Luzerne. . . .	Limb fractured by fall of coal from pillar in his cell.
28.	81	William Howells. . .	do.	45	M.	Yorktown.	Audenried, Carbon. . .	Both these men were caught by a fall of clod; Howells was only slightly injured and Coughan not seriously.
28.	82	John Coughan.	Laborer.	20	S.	do.	do. do. . .	

TABLE V—*Continued.*

Date of accident.	Number of accident.	NAME OF PERSON.	Occupation.	Age.	Married or single.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
Oct. 1.	83	Patrick Walsh.	Miner.	40	M.	Drifton, No. 2.	Drifton, Luzerne.	Face, hands and arms badly burned by gas which was brought down to the naked lights of Walsh and partner by a rush of coal from face of breast.
2.	84	John Malik.	Timber man.	30	M.	East Sugar Loaf No. 2.	Stockton, Luzerne.	Badly scalded by steam: in cutting out timber to change, allowed it to fall on pipe breaking it.
9.	85	Andrew Danko.	Miner.	35	M.	Tombicken.	Tombicken, Luzerne.	Right arm gashed and back contused by coal from a shot that broke through pillar from next breast: he was warned but went up his breast and was hurt.
10.	86	Bernard Donohue.	do.	50	M.	Yorktown.	Audenried, Carbon.	Ankle fractured by a loose piece of timber on gangway being pushed against him by cars.
16.	87	Jacob Schruner.	do.	40	M.	Derringer.	Derringer, Luzerne.	Left limb fractured below knee by fall of top coal while dressing down after firing shot.
17.	88	Anthony Urban.	do.	30	M.	Hazleton mine.	Hazleton, Luzerne.	Forehead gashed; body and limbs contused by a fall of top coal in Wharton vein breast.
20.	89	Nease McCool.	do.	45	M.	Highland No. 2.	Highland, Luzerne.	Both burned on face and hands by an explosion of gas which was brought down on to their naked lights by a fall of top coal after a blast.
20.	90	John Lowando.	Laborer.	22	S.	do. do.	do. do.	
20.	91	Geraca Mondy.	do.	35	M.	Stripping of South Mountain No. 1.	Jeanesville, Luzerne.	Back injured; knocked down by a fall of clay on stripping.
25.	92	Dennis Conahan.	Miner.	38	M.	Laurel Hill.	Hazleton, Luzerne.	Severely bruised by a fall of coal after a shot in his working place.
26.	93	Jacob Gallagher.	Brattice man.	45	M.	East Sugar Loaf No. 2.	Stockton, Luzerne.	Back bruised by piece of rock falling on him while taking brattice down from under it.
27.	94	Hen. David M. Evans.	Miner.	29	M.	do. do.	do. do.	Hip dislocated and back cut; struck by coal from a shot that exploded before he reached a place of safety after lighting the matches of two blasts.
29.	95	Edward Dettner.	Outside laborer.	27	M.	Cranberry.	Hazleton, Luzerne.	Severely squeezed between boilers while unloading them.
31.	96	Michael Blosky.	Driver.	21	S.	do.	do. do.	Arm fractured and shoulder bruised; caught between an empty mine car and door frame.
Nov. 5.	97	John Pavolko.	Miner.	28	S.	Stockton.	Stockton, Luzerne.	Hands slightly burned by an explosion of gas.
7.	98	Andrew Givens.	do.	33	S.	Harwood No. 5.	Harwood, Luzerne.	Arms and hands burned by an explosion of Judson powder, caused by reopening a rock hole that contained some unexploded dynamite.

12.	99	David Ferguson, . . .	do.	49	M.	Laurel Hill.	Hazleton, Luzerne, . . .	Breast badly bruised and limb gashed by a large piece of coal rolling down upon him.
12.	100	Andrew Westa, . . .	Fireman, ...	30	M.	Jeddo No. 3.	Jeddo, Luzerne, ...	Seriously scalded by steam and burned by fire; boiler exploded through his allowing the water to get too low; John Kentos, slate picker, was killed by explosion.
13.	101	John Michael. . . .	Outside laborer,	27	S.	South Sugar Loaf.	Hazleton, Luzerne. . .	Hip badly bruised; struck by empty stripping car.
14.	102	Michael Walsh. . . .	Miner.	50	M.	Highland No. 1.	Highland, Luzerne. . . .	Neck seriously gashed by fall of coal from pillar.
23.	103	Joseph Orginsky. . . .	Laborer.	35	S.	Cranberry, ...	Hazleton, Luzerne. . . .	Limb crushed by a fall of slate in old gangway which was being retimbered. He went under the bad roof against the express command of the miner in charge of gangway.
Dec. 1.	104	Joseph Kuntz. . . .	Miner.	36	M.	East Sugar Loaf No. 5. . .	Stockton, Luzerne, . . .	Severely bruised by falling down manway of his breast; was going back to fire a second shot.
1.	105	Michael Mussock. . .	do.	35	M.	East Sugar Loaf No. 6. . .	do. do. . . .	Bruised severely by coal falling on him while engaged in trimming after firing a blast.
1.	106	Jacob Bednarchic. . .	Outside laborer, .	30	M.	Lattimer No. 1 stripping. .	Lattimer, Luzerne. . . .	Compound fracture of right limb; was not working this day and while sightseeing was warned of blasting being done, but neglected his own safety and was struck by a piece of stone from blast.
2.	107	Andrew Morass. . . .	do. do. .	35	M.	Milnesville stripping. . . .	Milnesville, Luzerne. . .	Face cut and body bruised; got under a car for shelter from a blast, the shock of blast started the car and he was rolled along under it.
3.	108	Adam Roman.	Miner.	31	M.	East Sugar Loaf No. 5. . .	Stockton, Luzerne. . . .	Bruised by collar falling on him while timbering gangway.
4.	109	Connell O'Donnell. .	do.	41	M.	Harwood No. 1.	Harwood, Luzerne. . . .	Eye injured by coal from blast in next breast striking it; he was warned, but thinking he was safe stayed too near the cross-cut and coal glanced and struck him.
8.	110	John Donello.	Outside laborer. .	22	S.	Beaver Brook stripping. . .	Beaver Brook, Luzerne.	Seriously bruised; fell off and under loaded stripping car.
11.	111	Angelo Lucki.	Miner.	39	M.	Stockton.	Stockton, Luzerne. . . .	Right limb fractured below knee by fall of top coal while dressing down after firing a shot in breast.
11.	112	John Conner.	Driver.	19	S.	Cranberry.	Hazleton, Luzerne. . . .	Head badly gashed by flying coal from wreck of runaway car on gravity plane.
17.	113	John Paisley.	Fire-boss.	51	M.	Laurel Hill.	do. do. . . .	Face and hands burned by an explosion of gas, and head badly cut by falling down manway.
19	114	Benjamin Davis. . . .	Miner.	38	M.	Highland No. 1.	Highland, Luzerne. . . .	Right thigh fractured by a fall of coal and parting slate while standing timber under the same.
21.	115	John Lyons.	do.	45	M.	Cranberry.	Hazleton, Luzerne. . . .	Head and shoulders cut; thrown down a chute by the force of a blast which exploded as he was going back, expecting it had missed fire.

TABLE V—*Recapitulation.*

OCCUPATION.	Number.	Per cent.	NATIONALITY.	Number.	Per cent.	CAUSES OF ACCIDENT.	Number.	Per cent.
Miners	49	42.6	Hungarian	36	31.3	By explosions of gas	11	9.5
Mine laborers	24	20.9	Irish	23	20	By explosions of powder	11	9.5
Fire bosses	1	.9	American	19	16.5	By explosions of boilers	1	.9
Timber men	2	1.7	Polish	12	10.4	By falls of coal and roof	32	27.8
Brattice men	1	.9	German	9	7.9	By cars inside and on the surface	24	20.9
Road men	1	.9	Welsh	5	4.3	By coal and rock thrown from blasts and wrecks on slopes and planes	10	8.7
Bottom men	2	1.7	English	4	3.5	By falling down manways	4	3.5
Runners	1	.9	Italian	4	3.5	By falls of coal or clay on strippings	4	3.5
Drivers	9	7.9	Austrian	2	1.7	By miscellaneous causes inside	10	8.7
Oilers	1	.9	Scotch	1	.9	By miscellaneous causes on surface	8	7
Door boys	2	1.7						
Stripping foremen	2	1.7						
Engineers	1	.9						
Firemen	2	1.7						
Outside laborers	13	11.3						
Water boys	2	1.7						
Slate pickers	2	1.7						
Total	115	100	Total	115	100	Totals	115	100

SIXTH ANTHRACITE DISTRICT.

(SCHUYLKILL COUNTY.)

OFFICE OF THE INSPECTOR OF MINES,
SHENANDOAH, PA., *April 7, 1892.*

Hon. THOMAS J. STEWART, *Secretary of Internal Affairs:*

SIR: In compliance with the act of assembly approved May 20, 1891, I have the honor of herewith submitting to you my seventh annual report as Inspector of mines of the Sixth anthracite district for the year 1891.

The production during the year is 6,419,320 tons of coal, an increase of 182,766 tons as compared with the year 1890. Of the total production for the year—

	Tons.
The Philadelphia and Reading Coal and Iron Company produced,	3,899,765
The Lehigh Valley Coal Company produced,	499,611
The Lehigh and Wilkesbarre Coal Company produced,	434,825
Lentz, Lilly & Co. produced,	341,320
Coxe Brothers produced,	19,486
Individual operations produced,	1,224,293
Total,	6,419,320

Accompanying this report are the usual tables which show on table No. 1 four deaths from explosions of fire-damp, three from explosions of blasting material and six from premature explosions. Referring to deaths resulting from these three causes, we remark that they should be as the light of other days, for there is no good reason now why we should have mine explosions in the Sixth district.

As to the second cause, which resulted in the death of three men, they lost their lives by violating rule twenty-eight, page forty-three, of the mine law.

The third cause, premature explosions, resulting in the death of six persons, should rather be reported that they lost their lives from an unwarranted recklessness in approaching a danger that they themselves had constructed.

WILLIAM STEIN,
Mine Inspector.

In looking over the collieries in my district, I know of nothing existing in the condition of any of them to cause an unusual or extraordinary accident.

There is no standing gas so far as we know. The fire-bosses during the year have testified that they know of no standing gas and they make a record of their examinations daily in the colliery record book, which is always open to the inspection of the mine Inspector.

There is only one colliery in connection with which we might say there is standing water, and we have made several efforts to tap it from an old colliery, but they have proved unsuccessful. The workings of Park No. 3 slope, south dip, are 600′ east and 175′ south of the old workings in which this water is lodged. We have for a few years past occasionally discussed the best methods of displacing this water, and have come to the conclusion to either pump it out or drive west opposite the old workings and bore a hole north up the pitch the entire distance of 175′ through the solid coal and tap the water into No. 3 slope, which can be done with all safety.

It is true that occasionally circumstances will present themselves in mining coal that prevent the mine foreman from exactly living up to the letter of the law, and where no immediate danger presents itself, it would be arbitrary on the part of the mine Inspector to be too exacting. Under certain conditions we find occasionally that temporary difficulties are met with and in order to overcome them the law may not be fully complied with for the time being. Yet we say, that where an absence of a sufficient quantity of air is manifest under ordinary conditions, the mine foreman should be held responsible. While the condition of the collieries has been and is now, such that I do not anticipate any unusual accident, we nevertheless are often compelled to call the attention of not a few of the mine foreman to a better distribution of the air current, and also to the general sanitary condition of the colliery under their care. There is no good reason why we should have explosions of gas in my district if the man in charge does his duty and takes advantage of the machines erected to ventilate the mines. In order to have a well conducted colliery so as to produce the best results to all concerned, good ventilation, good road beds and the general colliery carefully examined (so that it may be kept practically safe) are indispensable. If the mine foreman would carefully digest the mine law, he could not fail to realize the fact that it is constructed for the benefit of his employer as well as for that of the employed, and he who would ignore this fact is not capable of having charge of a colliery.

The fact cannot be hidden that some of our mine foremen are too indifferent to the interests (which are inseparable) of employer and employe with regard to the question of good ventilation. For instance, a coal operator erects a fan capable of producing 100,000 cubic feet of air per minute and by reason of neglect or for some other reason the air-

ways dwindle down in area so that the ventilating power is absorbed by friction to the extent that only 33 per cent. of the efficiency of the fan is realized, or it may be (and I have found it so) that the air stoppings are neglected, so that the air-current as it travels in the inlet leaks direct to the fans without first having travelled the entire colliery, and in some cases the fan is put to an unusual speed in order to get the desired quantity of air. Again as to the roadbeds, the miners in some cases are obliged to walk to and from their work in water. I have myself in some collieries walked ankle deep on the "gangway," and as in the case of the fan, so it is with the mule power in transporting coal to the bottom of the shaft or slope, it is absorbed by friction. Power is a big item of the expense in running a colliery, and if he into whose care it is intrusted fails either by neglect or ignorance to properly economize its use he is certainly taking the money out of his employer's pocket, as well as depriving the workmen of that health and comfort it is intended by their employer they should have.

We feel justified in saying that if those having the power to hire mine foremen would displace them if found negligent or incompetent, that it would be the means of increasing the safety of life and property, prevent a great deal of unnecessary anxiety of mind and loss of time, and reduce the expenses brought about by litigation in our courts, which follow as the result of the inefficiency of the mine foremen.

TABLE No 1.—*Showing Comparative Statements of Fatal Casualties for the years 1890 and 1891.*

	YEARS.	
	1890.	1891.
Explosions of fire-damp,	3	4
Explosions of blasting material,	1	3
Premature explosions,	2	6
Falls of coal and roof,	22	28
Crushed by mine cars,	14	7
Falling down shafts and slopes,	6	3
By coal flying from shots,	2	1
By machinery on surface,	. . .	2
Suffocated by gas,	4	. . .
Miscellaneous,	12	12
Totals,	66	66

NUMBER OF FATAL ACCIDENTS AND AMOUNT OF COAL PRODUCED PER LIFE LOST.

	Number of fatal accidents.	Tons of coal produced per fatal accident.
Philadelphia and Reading Coal and Iron Company,	37	105,401
Lehigh and Wilkesbarre Coal Company,	3	144,941
Lehigh Valley Coal Company,	5	99,922
Lentz, Lilly & Co.,	5	68,264
Coxe Brothers,	3	6,495
Individual firms,	13	94,176

TABLE NO. 2.—*Showing Comparative Statement of Non-Fatal Casualties for the years 1890 and 1891.*

	YEARS.	
	1890.	1891.
Explosions of fire-damp,	18	10
Explosions of blasting material,	4	5
Premature explosions,	2	5
Falls of coal and roof,	38	31
Crushed by mine cars,	12	18
Falling down shafts and slopes,	. . .	. . .
By coal flying from shots,	1	3
By machinery on surface,	. . .	2
By machinery underground,	. . .	. . .
Explosions of boilers,	. . .	. . .
Suffocated by gas,	. . .	. . .
Miscellaneous,	22	18
Totals,	97	92

TABLE NO. 3.—*Showing the Quantity of Coal Produced and Shipped during the years 1890 and 1891.*

	YEARS.	
	1890.	1891.
Quantity of coal produced in tons,	6,236,554	6,419,302
Quantity of coal shipped in tons,	5,787,758	6,021,177

TABLE NO. 4.—*Comparative Table between the years 1890 and 1891.*

	YEARS.	
	1890.	1891.
Number of persons employed,	19,289	19,472
Tons of coal produced per life lost,	94,491	97,262
Ratio of employes per life lost,	292	294
Number of tons of coal mined per each personal injury,	38,260	40,622
Average number of tons of coal mined per employe,	323.6	330
Ratio of employes per each personal injury,	197.7	211.3

TABLE NO. 5.

Taking the death rate per thousand as a basis of comparison between the different companies and individual operators, we have the following ratio for the year:

NAMES OF FIRMS.	Number of employes.	Number of deaths.	Death rate per thousand.
Philadelphia and Reading Coal and Iron Company,	12,427	37	2.97
Lehigh Valley Coal Company,	1,547	5	3.23
Lehigh and Wilkesbarre Coal Company,	933	3	3.3
Lentz, Lilly & Co.,	977	5	5.1
Coxe Bros. & Co.,	320	3	9.37
Individual firms,	3,268	13	3.97
Totals,	19,472	66	

COMPARATIVE STATEMENT OF FATAL AND NON-FATAL CASUALTIES AND THEIR CAUSES FOR FIVE YEARS.

CASUALTIES.	1887.	1888.	1889.	1890.	1891.	Total for five years.
Fatal.						
Explosions of fire-damp,	2	1	4	3	4	
Explosions of blasting material,	1	1		1	3	
Premature explosions,	1	3		2	6	
Falls of coal and roof,	31	22	32	22	28	
Crushed by mine cars,	9	8	6	14	7	
Falling down shafts and slopes,	1	1		6	3	
By coal flying from shots,			1	2	1	
By machinery on surface,	2	2	2		2	
By machinery under ground,						
Explosions of boilers,						
Suffocated by gas,			2	4		
Miscellaneous,	8	6	13	12	12	
Totals of the respective years,	55	44	60	66	66	292
Non-fatal.						
Explosions of fire-damp,	8	20	14	18	10	
Explosions of blasting materials,	6	5	2	4	5	
Premature explosions,	2	6		2	5	
Falls of coal and roof,	41	30	32	38	31	
Crushed by mine cars,	22	23	15	12	18	
By coal flying from shots,	2	6	1	1	3	
By machinery on surface,	2				2	
Falling down shafts and slopes,	2		2			
Explosions of boilers,	1					
Miscellaneous,	17	22	17	22	18	
Totals of the respective years,	103	112	83	97	92	487

YEARS.	Killed.	Injured.	Total.	Total number of employes.	Number of employes to each casualty.	Number of tons of coal mined to each fatal casualty.	Number of tons of coal mined to each non-fatal casualty.	Ratio of tons of coal to each casualty.	Number of tons of coal mined to each casualty.	Total number of tons of coal mined.
1887,	55	103	158	14,608	91.3	98,117	51,394	33,727	369	•5,396,445
1888,	44	112	156	15,652	100.3	122,163	47,992	34,456	343.4	5,375,185
1889,	60	83	143	15,916	111.3	87,007.7	58,810.4	34,134	306.6	5,220,464
1890,	66	97	163	19,289	118	94,491	64,293+	38,260	323.6	6,236,554
1891,	66	92	158	19,427	123	95,747	69,775	40,628$\frac{1}{2}$	329.6	6,419,302
Totals,	291	487	778	84,892	543	497,525	292,264	181,205	1,672.2	28,647,950
Averages,	58$\frac{1}{5}$	97$\frac{2}{5}$	155$\frac{3}{5}$	16,978$\frac{2}{5}$	108$\frac{3}{5}$	99,505	58,452$\frac{4}{5}$	36,241	334.4	5,729,590

TOTAL NUMBER OF PERSONS EMPLOYED INSIDE AND OUTSIDE AND THE DESCRIPTION OF SERVICES.

Inside.

Inside foremen,	134	
Miners,	4,732	
Miners' laborers,	2,381	
All other company men,	2,939	
Drivers,	764	
Doorboys and helpers,	319	
Total inside,		11,269

Outside.

Outside foremen,	56	
Blacksmiths and carpenters,	432	
Engineers and firemen,	631	
Slate pickers,	4,013	
All other company men,	2,982	
Superintendents and clerks,	89	
Total outside,		8,203
Total inside and outside,		19,472

Number of tons of coal produced,	6,419,302 16/20
Number of tons of coal shipped,	6,021,177 10/20
Average number of days worked,	209½
Average number of days worked by the Philadelphia and Reading Coal and Iron Company,	226
Average number of days worked by the Lehigh Valley Coal Company,	155¾
Average number of days worked by the Lehigh and Wilkesbarre Coal Company,	261
Average number of days worked by Lentz, Lilly & Co.,	192
Average number of days worked by the Coxe Brothers,	36
Average number of days worked by the individual firms,	206⅘

FATAL ACCIDENTS AND THEIR CAUSES.

Under this head we have enumerated the following fatal accidents, and described in detail how they occurred, and we will show to those who are in any way acquainted with the mining of coal, that with proper care and observance of the mine law 60.6 per cent. of the total number (66) of fatal accidents would not have occurred.

No. 1. William Johnson, an engineer, aged thirty-four years, was killed

at Silver Brook colliery, on the 3d day of January by falling down the slope. He, with some assistants, were taking pumping machinery down the slope and he took his position on the spreader chain instead of beside the other workmen in the gunboat where he would have been safe. In being lowered, the gunboat came to a point where the angle of the slope increases from 37 to 45 degrees, and, as a matter of course, the side hitchings raised so as to become parellel with the slope rails and pitched Johnson down the slope.

No. 2. John Glump, a gangway laborer, age twenty-eight years, was killed at Park No. 2 colliery, on the 15th day of January, by a fall of coal. If the miner for whom he was working had put the timber in place at the proper time this accident could have been prevented.

No. 3. John Olshoskie, a miner, age twenty-six years, was fatally burned by powder at Ellangowan colliery, on the 12th of February, and died in the Miners' hospital on the 22d. This man was filling a cartridge and he had the powder keg under his arm and his lamp on his head, a spark from his lamp fell into the keg which exploded and cost him his life.

No. 4. John H. Rice, miner, age twenty-eight years, was fatally burned by powder, on the 12th of February, at the Ellangowan colliery, and died in the Miners' hospital, on the 17th. This man did precisely the same thing as Olshoskie and was working in a different section of the colliery.

The law governing the handling of explosives, page 43, rule 28, under the head of general rules is as follows: "Whenever a workman shall open a box containing explosives, or, while in any manner handling the same, he shall first place his lamp not less than five feet from such explosive and in such a position that the air-current cannot convey sparks to it, and a workman shall not approach nearer than five feet to an open box containing powder, with a lamp, lighted pipe or any other thing containing fire.

No. 5. Joseph Bogdonwich, laborer, age twenty-four years, was killed at Oneida No. 3, on the 19th of February, by falling down the slope. He came up the slope to help get down a set of gangway timber, and had assisted putting the timber truck over the knuckle. He jumped on the truck thinking that he could ride down, but the arrangements were that he was to walk down, and instead of getting off the truck in front, he jumped sidewise on the slope track and over-balanced himself, falling to the bottom a distance of 250 feet on an angle of 50 degrees.

No. 6. John Kelts, miner, age twenty-eight years, was fatally injured by what is termed a premature explosion of a blast, at Indian Ridge colliery, on the 28th of February, and died in the Miners' hospital March 4. Kelts thinking the squib had missed fire, went back to replace it with another squib, when it was found that the first squib had not been given enough time to explode the blast, as the shot went off just as he got near it. Three lives have been sacrificed this year from this careless practice.

No. 7. James Jackson, miner, age thirty-five years, was instantly killed at Girard Mammoth colliery, on the morning of the 26th of February, by a fall of top coal. He was working in an opening advancing towards standing water, and keeping bore holes in advance of face of coal twenty to twenty-five feet, and after firing a shot in the mining or bottom bench Jackson went under the overhanging benches of coal to dress off the fractured coal, when the coal over him fell. I had gone to this colliero in the morning to ascertain what progress had been made towards tapping the water, when I learned of the accident, and met with Mr. William Gregory, one of the company's mining engineers, who had also visited the colliery to inspect and again survey the adjacent workings, so that no accident should occur from the tapping of the water.

I got some of the miners to view the place where Jackson lost his life, and they all agreed that instead of going *under* the upper benches of coal they should have either been barred or blasted down. This is too often done, and unless the workmen will cease to take such risks, our death rate will continue to increase.

No. 8. Joseph Powell, driver on dirt bank, aged twenty-four years, was killed at Turkey Run colliery, on the 3d day of March, by being taken over a bridge by mules and cars into the creek. On the day of the accident I made my investigations and found that Powell was driving his mules at an unusual rate of speed, and as he got on the curve at the north end of the bridge, the dumpers, which have a side swinging motion, left the track at a tangent to the curves, breaking through the side railing taking him and the mules down into the creek. A young man named Beadle was also on the dumper with Powell, but he escaped with a broken arm and leg. One of the mules was also killed. Had Powell been driving at an ordinary rate of speed, this accident would not have occurred.

No. 9. Steve Knuckle, outside laborer, aged thirty years, was run over by the "gunboat" on dirt plane at St. Nicholas colliery, on the 4th day of March, and was instantly killed.

I happened to visit this colliery on this date, and was at the bottom of the plane when the accident occurred. Knuckle was employed to keep the pulley holes clean so that the ropes passing over them would keep them in motion, thus preventing the ropes grooving the pulleys and also damaging the ropes from friction in the event of the pulleys becoming blocked. I could see no reason why this man should have got in the way of the "gunboats" passing and repassing him, as he had acres of room on either side of the plane tracks.

No. 10. Richard Paddock, a miner, aged forty-five years, was instantly killed at Girard colliery, on the 17th day of March, while charging a hole with dynamite. This man lost his life by ramming the dynamite into the hole with an iron bar contrary to rule 30, page 43, under the head of general rules, which is as follows: "In charging holes for blasting in

slate or rock in any mine, no iron or steel pointed needle shall be used, and a tight cartridge shall not be rammed into a hole in coal, slate, or rock, with an iron or steel tamping bar, unless the end of the tamping bar is tipped with at least six inches of copper or other soft metal." The company had provided tamping bars tipped with copper, but Paddock did not use them. We find that in this case the copper-tipped tamping bar is laid away and covered with rock material, and rather than search for it, if it is not readily found, the miner takes an iron bar to tamp the hole, and while he knows he is doing wrong, he hushes his conscience to silence with the hope that he can do so with no serious results.

No. 11. William Mulhern, a rock miner, aged twenty-four years, was killed instantly at Girard colliery, on the 17th day of March, at the same time that Paddock lost his life.

No. 12. Mat Jackobitch, miner, aged thirty years, was fatally injured by a fall of coal at Gilberton colliery, on the 23d day of March, and died in the Miners' hospital on the 24th. Jackobitch was working at what is known as "robbing back," and it was necessary to renew the chute platform, and to do this, a prop had to be removed which had been put in place years ago to support a piece of coal on the "rib" of the chute, he, with a seeming want of knowledge of cause and effect, cut away the foothold of the prop, and, as a matter of course, the coal supported by it, fell on him.

No. 13. Patrick Fallon, a miner, aged twenty-five years, was fatally injured by a fall of coal at the Knickerbocker colliery, on the 22d day of March, and died in the Miners' hospital, April 1. He and his "butty" had tried to bar down this piece of coal, but concluded to load a car and then stand double timber under the loose coal, but before they had time to even get from under it a fall came which caused Fallon's death. I examined the surroundings subsequent to the accident, and it was quite apparent that it was unsafe to work under this loose top, from the fact that "slips" or dislocations were very prominent, and in addition, taking into consideration the fact that a short time previous to the fall a shot had been fired, which made the place so that no practical miner would have done other than continue to make his place of work safe, by either barring or blasting all loose material down.

No. 14. Michael Welsh, a laborer, aged forty-eight years, in sinking shaft, was killed in Shenandoah City shaft, on the 26th day of March. He, with the other men of the "shift," were working in the bottom of the shaft. Welsh and another of the workmen had loaded a bucket and given the signal to hoist, the engineer responded to the signal given him and when the bucket was up a distance of fifty feet or at a point where the last sett of timber was placed, it came in contact with the timber, forcing out one of the "punch blocks" which fell on Welsh.

It occurred to me that before the bucket was sent away from the bottom that the men did not take time to allow it to "steady," which must

always be done so as to prevent it from swinging in its ascent. In company with Messrs. John L Williams and John J. Bradigan, I descended the shaft and waited until two buckets had been filled and hoisted. I found that after practically bringing the bucket to rest about four feet up from the bottom of shaft, it touched nothing in being hoisted, and I am of the opinion that the bucket not having been given the proper time to "steady," was the cause of it striking the timber.

No. 15. Patrick Downey, a miner, aged forty-five years, was fatally burned by an explosion of gas in Shenandoah City colliery, on the 6th day of April, and died on the 15th. This colliery had been idle since the 24th of December, 1890. Downey with the other workmen came to work on the morning of the 5th, but his butty was absent. Mr. Brooks, the fire-boss, met Downey and told him as his "butty" was not out, he could not work, and also told him that there was gas in the breast in which he was working and left him, to attend to other sections of the colliery under his care. Downey, however, disobeyed the fire-boss, and went up to his work and fired the gas. Four lives have been lost in my district this year exactly under like circumstances, and the fire-bosses in each case have contributed to these deaths, in not carrying out the provisions of the law as set forth in rule 7, under the head of general rules, page 37. The last clause of the rule reads as follows: "It shall be the duty of the fire-boss to remain at the danger stations until relieved by some one authorized by him, or the mine foreman, who shall stand guard until said mine or part of mine shall be reported safe, and he shall not let any person pass without permission from the fire-boss." So that it is not enough on the part of the fire-boss to merely *mark on the danger board* "gas" or to tell any man that there is gas in working place, but, to comply with the law, he must stand guard or deputize some one to act for him, so as to prevent any one passing to his work, and especially so when he has detected gas in any of the working places.

No. 16. John Leigman, a miner, aged thirty-four years, was fatally burned by an explosion of gas at Primrose colliery, on the 6th day of April and he died on the 11th. This man lost his life under circumstances similar to Downey with this difference that Leigman, after going up a certain distance in his breast, unscrewed the gauze from the cup of his lamp.

No. 17. William Lesisky, laborer, aged twenty-eight years, was fatally injured by a fall of slate, on the 13th day of April, and died on the 1st day of August. This man was injured at North Mahanoy colliery, and if the miner had timbered as he should have done, Lesisky would not have lost his life, so far as that piece of slate is concerned.

No. 18. John Bodsnick, laborer, aged twenty-five years, was killed, on the 27th day of April, by a fall of coal in Silverbrook colliery. The miner was to blame in not timbering, and the foreman was also to blame for not seeing that this gangway was timbered properly.

No. 19. Peter Smeltzer, a miner, aged thirty-four years, was killed, on the 5th day of May, at Packer No. 3 colliery. The colliery had been idle for a few days, but some of the men had been allowed to work. At the "fourth lift" five men gave the signal to be hoisted, and Smeltzer with two other men were standing at the second lift to be hoisted also, and as the car was nearing the second lift Smeltzer called to those coming up to know if he and his companions could get in, getting an answer in the affirmative he gave the signal to stop, which the engineer responded to. Smeltzer gave the signal again to hoist and got on the spreader chains, and in adjusting his cans he overbalanced himself and the carr an over him.

No. 20. John Medley, a miner, aged twenty-five years, was fatally burned by powder, on the 25th day of May, at the Suffolk colliery, and died in the Miners' hospital, on the 4th day of June. He was filling a cartridge with his lamp on his hat and a spark from the lamp fell into the powder keg which contained about twenty pounds of powder. I had landed at the bottom of the slope and was met by Mr. Tasker, the foreman, just as Medley was brought to the bottom.

No. 21. William James, slate picker, aged twenty years, was killed, on the 29th day of May, by being caught in the breaker machinery at Elmwood colliery. I visited the place of the accident and found the machinery practically safe, fenced off, and any way by which those working in this particular place in the breaker could be injured, would be by climbing over, or reaching through the fencing.

No. 22. Michael Micko, a slate picker, aged about twenty-five years, was killed, on the 1st day of July, by being caught in the breaker machinery at Turkey Run colliery. On the 3d day of July I visited the place where this man lost his life. It was in the same condition as when the accident occurred. I came to the conclusion that Micko must have fainted and his legs worked through under the bottom fence board, which was only nine inches from the floor, thereby coming in contact with the machinery.

No. 23. John McAndrew, a laborer, aged twenty-five years, was killed, by a fall of top slate, on the 28th day of July, at East Bear Ridge colliery. The miner was told by the assistant foreman to either take the top slate down or stand props, he did neither, and at the inquest the assistant foreman swore he must have made a mistake when he told me that he had told the miner that the top was bad, and that he must either prop or take down what was loose, showing distinctly that this man wanted to hide the miner behind something else than the truth.

No. 24. George Bell, a miner, aged twenty-seven years, was killed, on the 1st day of August, by a fall of coal at Glendon collery. He was "robbing back" the top bench of the vein which was left up until the breast had been finished, and in doing so a light "skip" was taken from the pillar. I made an examination of the breast on the 3d and expressed

surprise that any man would attempt to work under the piece which fell on Bell, for it was not necessary to go under it.

No. 25. Nicholas Sweitzer, a miner, aged twenty-three years, was killed by a fall of coal at Park No. 3 slope, on the 11th day of August. The mine foreman had told this man to blast the piece of coal down, which he promised to do, but the testimony given at the inquest proved that Sweitzer did not do as he was ordered by the foreman.

No. 26. Joe Pifer, a miner, aged twenty-six years, was fatally burned by an explosion of gas at Packer No. 4 colliery, on the 22d day of August and died the same day. This accident occurred through the negligence of Mr. Bainbridge, the fire-boss, in not complying with rule 7, page 37, and also through the disobedience of Pifer in not doing as he was told by the fire-boss. An exact parallel case to that of accident No. 15.

No. 27. Anthony Miskill, a miner, aged forty-five years, was fatally burned by an explosion of gas at Packer No. 4, on the 22d day of August and died on the same day. Miskill was injured at the same time with Pifer and was working in the same breast.

No. 28. John Donsosheftsky, a laborer, aged twenty-five years, was killed by a fall of coal, on the 28th day of August, at Suffolk colliery, through the neglect of the miner in charge in failing to take all loose coal down after firing a shot before allowing his laborers to resume work, as prescribed by rule 14, page 39, of the mine ventilation law.

No. 29. George Rolin, a miner, aged thirty years, was killed, on the 2d day of September, at William Penn colliery, by going back to a shot he had lit before giving it time to explode.

No. 30. Daniel Reese, bottom man, aged twenty-one years, was killed by being jammed between two cars while they were in motion, at West Shenandoah colliery, on the 5th day of September. Coupling and uncoupling mine cars while they are in motion is becoming quite a common practice with some of our young men, and although they are frequently cautioned against doing so by the foreman, as soon as he is out of sight they persist in doing it, and we have had no less than seven fatal and nineteen non-fatal accidents during the year from this cause, which is over 20 per cent. of the total casualties.

No. 31. John Klatt, gangway miner, aged forty-three years, was killed at Indian Ridge colliery, on the 21st day of September, by a fall of the top benches of coal. He had fired a shot in the bottom bench which made a complete fracture, from the top of the bench to the floor of the vein, but did not properly displace the coal, and in barring out a portion of it, the top bench was left unsupported. Klatt found that the top bench was "weighing down" and he, with his laborer, tried to lever or bar it down, but could not, as the fracture at which the top bench wanted to fall off was two feet in advance of the bottom bench. He then, in order to take out all the loose coal from under, sat under the overhanging bench, and with his pick kept mining until it fell; this is a very

common practice with miners. If Klatt had drilled about ten inches of a hole, and charged it with four inches of powder, he would have taken down the coal in less time, with less trouble, and his life would have been saved.

No. 32. Joseph Martzucanis, miner, aged twenty-two years, was killed at William Penn colliery, on the 2d day of October, by a shot firing on him. He had made all preparations to blast and had placed his squib and went back to a heading for safety. He did not, however, give the necessary time for the shot to explode, and went up to place another squib, when the blast went off, killing him instantly. These are termed "premature explosions."

No. 33. Frank Scheoler, aged forty years, was killed at Lawrence colliery, on the 16th day of October, by falling down the slope a distance of 1,400 feet, on an angle of 50 degrees. Scheoler, with nine others, had been hoisted to the surface after finishing their day's work, and all got off the "gunboat." The signal that the men had all landed was given to the engineer, Scheoler it seems, left his can in the boat and he made an attempt to get into it, but the "boat" was hoisted just far enough up the trestling to allow the poor fellow to step to his death.

No. 34. Joseph Grasser, laborer, aged forty years, was killed at Silverbrook colliery, on the 20th day of October, by a fall of coal, the fault of the miner for whom he was working in not timbering.

No. 35. George Cowilick, laborer, aged thirty years, was burned to death, on the 29th day of October, at Oneida breaker. He intended to fill his lamp with oil but, being on the night shift, thought that benzine would show a better light working about the breaker, and while filling his lamp, ignited all that was in the can.

No. 36. Washington Huntzinger, a laborer, aged thirty-five years, was fatally injured at Suffolk colliery on the 7th day of November, by a fall of coal, and died in the Miners' hospital, on the 8th. He was working for a contract miner named Hornberger, and went back in the "gangway" a few hundred yards to load coal which had fallen in an old chute, and which he thought could be easily loaded, but while loading this loose coal, he was taking the support from the fractured coal above him. He went there without the knowledge of his employer.

No. 37. Adam Mauk, a switch-boy, aged sixteen years, was fatally injured at Bear Run colliery, on the 16th day of November, and died in the Miners' hospital December 2. He left his place of work, as many boys do, in the absence of those in charge, and was squeezed between the cars and "brattice" in a tunnel.

No. 38. George Motto, a miner, aged thirty-five years, was killed at Honeybrook No. 4, on the 15th day of December, by a fall of coal. He was barring down coal and evidently did not examine the surroundings carefully, otherwise he would not have advanced so far under the loose top before commencing to bar it down.

No. 39. John Cropenski, a miner, aged fifty-two years, was killed by a fall of coal at Ellangowan colliery, on the 17th day of December. He went under the coal, to drill a hole in the under bench instead of barring or blasting the top down and it fell on him.

No. 40. Joseph McAlandy, a miner, aged thirty-four years, was fatally injured at Girard colliery, on the 28th day of December, and died in the Miners' hospital on January 6, 1892. He went back to a blast before giving it time to explode.

No. 41. William Cashon, a miner, aged thirty-six years, was killed at Park No. 2 colliery, on the 31st day of December, by a fall of coal. While I was making my examination after the accident, Cashon's partner told me that they intended taking down the loose coal, after they had loaded a car.

EXAMINATION OF APPLICANTS FOR MINE FOREMAN'S CERTIFICATES.

The annual examination of applicants for mine foreman's certificates in the Sixth district, was held in Pottsville on the 6th and 7th of July. The examiners were William Stein, mine Inspector, William H. Lewis, superintendent, and Frank O. Boyle, miner.

The following are names of the successful candidates :

David Tucker, ... Mahanoy City.
Frank H. McCormick, ... Shenandoah.
John Conway, ... Yatesville, Shenandoah.
George J. Richardson, ... Mapledale, Ellangowan.
David Jones, ... St. Nicholas.
John Garvey, ... Gilberton.
Samuel Platt, ... St. Nicholas.
Lawrence P. Murphy, ... East Creek.
Edward J. McDonald, ... Colorado East Creek.
Stephen Terrill, ... Mahanoy City.
Thomas T. Williams, ... Audenreid.
Richard Rosby, ... Gilberton.
Patrick Fenton, ... Silverbrook.
John Schmidt, ... Shenandoah.
Thomas Whittaker, ... Yatesville.
Benjamin D. Williams, ... Silverbrook.
Henry F. Javins, ... Shenandoah.
Charles Harlor, ... Raven Run.
Thomas Beddow, ... Mahanoy City.

Packer No. 1, formerly known as Colorado, is now tributary to Packer No. 5. All the coal mined from Packer No. 1 slope is hauled by locomotive power to be prepared at No. 5 breaker. On the evening of the 28th of July, a fire was discovered between the head of the slope and the surface. The fire burned the entire length of the opening, through which the ropes are conducted from the engine on the surface to the

cages of the underground slope. Fires in mines are sometimes an unknown quantity, so far as getting their actual location and magnitude is concerned, and even when located it is a difficult task to approach them in order to successfully extinguish them; fortunately, however, the fire did not go down the slope, for had it done so it would have been a very serious matter. I visited the scene of the fire on the 29th, and again on the 30th, in company with Heber S. Thomson, Esq., engineer for the Girard estate. It was evident from what could be seen on the 30th that the fire was extinguished or nearly so. In fighting mine fires we have to take the most favorable circumstances as they are thrown in our way. In this case the fan-way is driven up and parellel with the opening through which the ropes went down to the slope. The fan was stopped, the air-current continued its same course until reaching a heading connecting the rope-way with the fan-way, this of course, swept away the smoke from the fire and allowed the men to follow up with the hose line, and we were successful in extinguishing the fire in two days. The colliery, however, was idle two months. A party of men had been retimbering at the bottom of the rope-way, and it would be safe to presume that in some way they ignited the dry timber with their lamps.

IMPROVEMENTS AT COLLIERIES.

At Ellangowan colliery a new jig house has been erected, having a frontage of fifty-three feet, depth forty-one feet, and height forty feet, fitted up with nine Clark jigs, one pair of No. 6 rolls, two screens five feet in diameter and thirteen feet long, with jackets six and one-half feet in diameter and thirteen feet long, one screen five feet in diameter and thirteen feet long, two screens four feet in diameter and six feet long, for slate pickers, one set of elevators sixty feet long with buckets 24″x24″, one set of elevators forty feet long with buckets 12″x12″ and slate picking and heating apparatus.

A tunnel was driven from Holme's No. 1 slope, first lift, east gangway (at breast No. 36) to Primrose vein, a distance of ninety-one and two-third yards, a pair of engines, direct acting, cylinders twenty-four inches in diameter, stroke sixty inches, with drum and other connections complete, have been erected to replace the old engine. Two bore-holes, each seven and five-eighths inches in diameter and three hundred and eighteen feet deep, were drilled from the surface and lined with five and five-eighth inch casing enclosed with sand. These bore-holes connect with a pump-room at the bottom of the shaft, and through which steam is conveyed to supply the pumps. Two (9″x38″) pumps of P. and R. type have been erected.

At Kohinoor colliery a new slope (called No. 5) was driven through the rock measures from the Mammoth to the Seven-foot vein on an angle of eighteen degrees south, and under and in a line with No. 1 slope, distance from head of No. 1 slope to knuckle of No. 5 slope one hundred and seventeen feet, distance from No. 5 slope to bottom slate of Mam-

moth vein forty-three feet, distance from bottom slate of Mammoth vein to top slate of Seven-foot two hundred and eighty-nine feet, and the slope is now sunk a distance of two hundred and thirty-one feet in the Seven-foot vein, which is 10′ 9″ thick having 9′ of coal. At one hundred and twelve feet from knuckle of No. 5 slope the Skidmore vein was cut 5′ 6″ thick having 3′ of coal. Dip of these veins seven and one-half degrees south.

Two additional bore-holes were put down (making eleven in all) through which to convey silt and water to fill the space made by the mining of the Mammoth vein. The first mention made of these bore-holes was in my report for 1887, and this method of filling up the mine excavations in connection with Kohinoor colliery has been in operation ever since, and has been effectual to the extent that it has checked the surface subsidence and prevented the damaging of house properties. Mr. John L. Williams, division superintendent of the P and R. Coal and Iron Company's collieries in my district, who first conceived the idea of filling up mine openings by bore-holes, is very jubilant over his success, and several prominent mining men have inspected Kohinoor colliery with a view of adopting the same means of filling mine excavations where practicable, and I am informed by reliable authority that it has been commenced in the Wilkesbarre mining district.

At Indian Ridge colliery a new underground shaft has been sunk to the Buck Mountain vein with three compartments, two hoistings 11′ 8″x7′ and one pumping 11′ 8″x3′, length of shaft one hundred and seventy-two feet. The vein was cut thirteen feet thick on east side of shaft and six feet on the west side and is very much confused, but in trial holes driven north and south the vein is in its normal condition thirteen feet thick with ten feet of coal. The trial hole north passed through a dirt fault ten yards long, beginning about forty yards from shaft. At forty feet from top of shaft the Skidmore vein was cut 7′ 8″ thick with 6′ 4″ of coal. At sixty-six feet from top of shaft the Seven-foot vein was cut 6′ 11″ thick with 6′ 4″ of coal. A tunnel two hundred and eighty-nine feet long was driven west from bottom of Buck Mountain subterraneous slope through the fault and cut the Seven-foot vein 7′ 10″ thick with 6′ 4″ of coal. Two bore-holes have been drilled to conduct the ropes from hoisting engine on surface to underground shaft.

At Knickerbocker colliery a new slope (called No. 4) has been sunk in the top member of the Mammoth vein, a distance of three hundred and sixty-two feet below the old water level drift, making a total distance from surface to new gangways eight hundred and twenty-six feet. A pair of engines, direct acting, have been erected at top of this slope, cylinders thirty inches and stroke sixty inches. A tunnel from top split, first lift, east gangway (at breast one hundred and five), was extended sixty-six feet through saddle from bottom split; total length of tunnel one hundred and sixty-two feet, thickness of bottom split 6′ 6″ with 4′ 5″ of coal.

At Shenandoah City colliery the main hoisting shaft was south from the Mammoth to the Buck Mountain vein, a distance of one hundred and sixty feet; distance from surface to the Mammoth vein, two hundred and ninety-four feet; total length of shaft four hundred and fifty-four feet. Buck Mountain was cut 12′ 1″ thick with 9′ 4″ of coal. An airway three hundred feet long was driven from the shaft level east gangway to the Plank Ridge old Buck Mountain workings.

At West Shenandoah colliery the hoisting slope in Buck Mountain vein is being extended, and is now down one hundred and seventy yards below the third lift.

At Turkey Run colliery a new underground slope is being sunk from the head of old Mammoth vein slope through rock and in the Seven-foot vein. From the knuckle of slope to bottom slate of bottom split is forty-six feet. From bottom slate of bottom split to top slate of Seven-foot vein is two hundred and twenty-five feet, the estimated length of slope is about ten hundred and twenty-one feet from the knuckle to a point three hundred and forty-five feet below West Shenandoah colliery third lift gangway.

At Hammond colliery a slope has been sunk in the Buck Mountain vein to second lift below water level, a distance of two hundred and eighty-four and one-third yards, and timbered with a nineteen foot collar, twenty-three feet, and eight feet of rail. An airway eighty-nine yards long and twelve feet wide has been driven from second lift west gangway to first lift gangway.

An airway one hundred and three yards long and twelve feet wide from second lift west gangway to first lift gangway. An airway ninety-one yards long and twelve wide from first lift Buck Mountain, to No. 1 West Connor drift is in course of construction.

The new Buck Mountain slope is used for lowering and hoisting men, and material, such as timber rails, etc.

At Girard colliery a tunnel thirty-one yards long (called No. 4 west) from second lift Skidmore vein north dip west gangway to Mammoth vein north dip. A monkey tunnel thirty-two yards long has been driven (nearly over above main west tunnel No. 4) from monkey gangway Skidmore vein, north dip, to Mammoth vein, dip of vein 75° north. A tunnel (No. 4 east) nineteen yards long has been driven north (from a point nineteen hundred and sixty feet east of Tender slope) from Skidmore vein east gangway, north dip, to Mammoth vein, north dip. A monkey tunnel fifty-eight yards long (called No. 4 east), (and nearly over No. 4 main east tunnel) has been driven from monkey gangway in Skidmore vein to south dip of Mammoth vein. A monkey tunnel (called No. 5 east) nineteen and two-thirds yards long has been driven from monkey gangway, Skidmore vein, north dip, to Mammoth vein, north dip.

Section No. 1 east tunnel has been extended seventy-one yards to Buck Mountain vein, south dip, making total length of tunnel from Skid-

more vein, north dip, to Buck Mountain vein, south dip, one hundred and twenty-seven yards which includes sixty-seven feet through Mammoth vein.

At Girard Mammoth colliery an underground slope has been driven westward in the basin of the Mammoth vein two hundred and thirty-two and two-thirds yards.

Gilberton Colliery.

A tunnel was driven from Mammoth vein, bottom split, to Holmes vein second lift ninety-five yards long. Also tunnel driven from Mammoth vein bottom split to Holmes vein, third lift, ninety-five yards long.

West Bear Ridge Colliery,

A new exhaust fan 18′ diameter has been erected, with direct acting engine, 18″ cylinder, 16″ stroke. An airway west of slope, thirty-four yards long has been driven. An aircourse tunnel has been driven across the basin in rock seventy-five yards long in third lift, area seventy feet A tunnel has been driven across the basin from the south to the north dip of the Mammoth vein, a distance of sixty yards, this is the transportation tunnel of which forty yards was driven for double track and twenty yards for single track. At what is called the "East Side" of West Bear Ridge (or known formerly as East Bear Ridge) a tunnel was driven from Mammoth vein, bottom split, water level (at breast 54) to the Buck Mountain, one hundred and one and two-thirds yards long, so that all the water east of this point will run north through this tunnel, west to the main water level tunnel, which will allow of taking all the coal between the slope and water level gangways, in the Mammoth vein, for a distance of about one thousand yards. A tunnel was driven for air from top split of Mammoth vein, west gangway, to a point opposite airway, driven from slope level in Mammoth vein, bottom split, a distance of twenty yards. A rock tunnel was driven for back switch at foot of hoisting slope for double track, length twenty-three yards. An airway was driven west of Trial slope, one hundred and one yards long. A rock airway in Leader above the Skidmore vein has been driven 9′ x 12′ and one hundred and thirty yards long to surface. An airway has been driven in east Buck Mountain gangway water level (at breakers No. 14) up one hundred and seventy-two yards in the vein and twenty-seven yards through rock to the surface.

Mahanoy City Colliery.

A tunnel was driven from east bottom split gangway second lift to Skidmore vein, fifty yards long. A hoisting slope was also sunk in Seven-foot vein (which is an extension of North Mahanoy colliery No. 1 slope) a distance of one hundred and thirty yards below Mahanoy colliery second lift. A dam has also been built at a point between Mahanoy

City and Ellangowan collieries, so that if it became necessary to drown one colliery, it would not necessitate stopping the operations of the other.

Elmwood Colliery.

An airway was driven in East Skidmore counter one hundred and thirty-two and one-third yards long, of which one hundred and seven and one-third yards was driven as a breast and twenty-five yards as an airway.

Tunnel Ridge.

An airway in east bottom split gangway slope level has been driven during the year, two hundred and fifty yards long. An airway has been driven in the Holmes vein east gangway slope level, ninety yards long, with an air shaft to surface 8′x8′x43′ deep, on which a new fan is erected.

St. Nicholas Colliery.

A tunnel has been driven from bottom split of Mammoth vein second lift to top split of Mammoth vein thirty-five and one-third yards long.

Suffolk Colliery.

A new fan has been erected. Diameter, eighteen feet. Fan engine, sixteen inch cylinder, twenty-four inch stroke, direct acting. An air shaft has been sunk to top split of Mammoth vein, west of slope 20′ deep, 6′x6′; an airway in Primrose vein west gangway one hundred and twenty-two yards long; an airway in Diamond vein west counter gangway one hundred and thirty-seven yards long; an airway in top split of Mammoth vein east gangway one hundred and fifty-seven yards long, and an airway in bottom split of Mammoth vein water level, forty-three yards long.

At North Mahanoy colliery a new slope has been sunk in the Seven-foot vein south dip a distance of three hundred and sixteen feet, vein eight feet thick and in good condition; this slope is known as No. 4. A tunnel fifty-eight yards long in No. 2 slope from the bottom split of the Mammoth vein to the top split cutting the vein thirteen feet nine inches thick, with about two feet four inches of refuse. Dip of vein forty degrees.

At Maple colliery extensive preparations are being conducted to make it one of the largest shippers in the anthracite coal fields. The breaker, which has been completed and will commence preparing coal on the 1st of April, has been constructed and fitted up with all the most improved machinery for the preparation of coal and has a capacity for shipping two thousand five hundred tons daily. The inside or underground operations are, without any question, the best, safest and most econom-

ical of any colliery we have ever seen. The openings (such as tunnels, airways, traveling ways and outlets) not being completed, prevents me from giving a complete description of this colliery this year, but I will be able to do so next year, all being well.

At Springdale colliery, belonging to Lentz, Lilly & Co., a subterraneous slope has been sunk, and a tunnel driven across the basin from the north dip of the Buck Mountain vein to the south dip, a distance of eight hundred feet, cutting the north dip of the top and bottom splits of the Mammoth vein, Skidmore and Seven-foot, and again cutting the same veins on the south dip. Thickness of veins are as follows

	North dip.		*South dip.*	
Mammoth	Top split, . . .	12′ thick.	Top split, . . .	16′ thick.
	Bottom split, . .	3′ thick.	Bottom split, .	4′ thick.
	Skidmore, . . .	4′ thick.	Skidmore, . . .	6′ thick.
	Seven-foot, . . .	7′ thick.	Seven-foot, . .	5′ 6′′ thick.
	Buck Mountain,	12′ thick.	Buck Mountain,	16′ thick.

A shaft was sunk 5′x4½′x196′ deep from surface (connecting with head of subterranean slope), through which the wire ropes from engine drum pass down to hoist the cars. The engines are direct acting, cylinders thirty inches, stroke forty-eight inches. The hoisting arrangements are very satisfactory and sixty cars an hour can be hoisted. An airway was driven up in the Skidmore vein, and the sixteen-foot fan has been moved from the Buck Mountain water level drift to the Mammoth vein water level drift on the north dip, which has considerably increased the volume of air. Several outlets have been constructed so that the workmen have ready means of ingress and egress to all the veins in connection with this colliery.

At Rehley's Run the breaker has undergone extensive repairs. A new double acting pump, with sixteen-inch plunger, built by Garner & Sons, Ashland, has been put in place at the second lift below water level. The main hoisting slope has been retimbered at intervals. The West Mammoth vein gangway has been partially retimbered and log cribbings have been built in many of the old chutes to strengthen the surroundings of the gangway. Mr. Baird, the superintendent, takes special pains in keeping the outside, as well as the inside, departments in first-class condition.

At William Penn colliery a new slope is being sunk in the Buck Mountain vein and will terminate six hundred feet below the level of No. 2 subterranean slope, still leaving about two lifts in the basin. A tunnel will be driven from the Buck Mountain (at the termination of this six hundred feet) to the Mammoth vein. The entire length of this new slope will be fifteen hundred feet to the saw mill or first water level drift. The Buck Mountain vein is nine feet thick and has an excellent hard top. The slope is sunk sixteen feet wide and requires no timber. A new slope is sunk in the bottom split of Mammoth vein in a local

CREEK

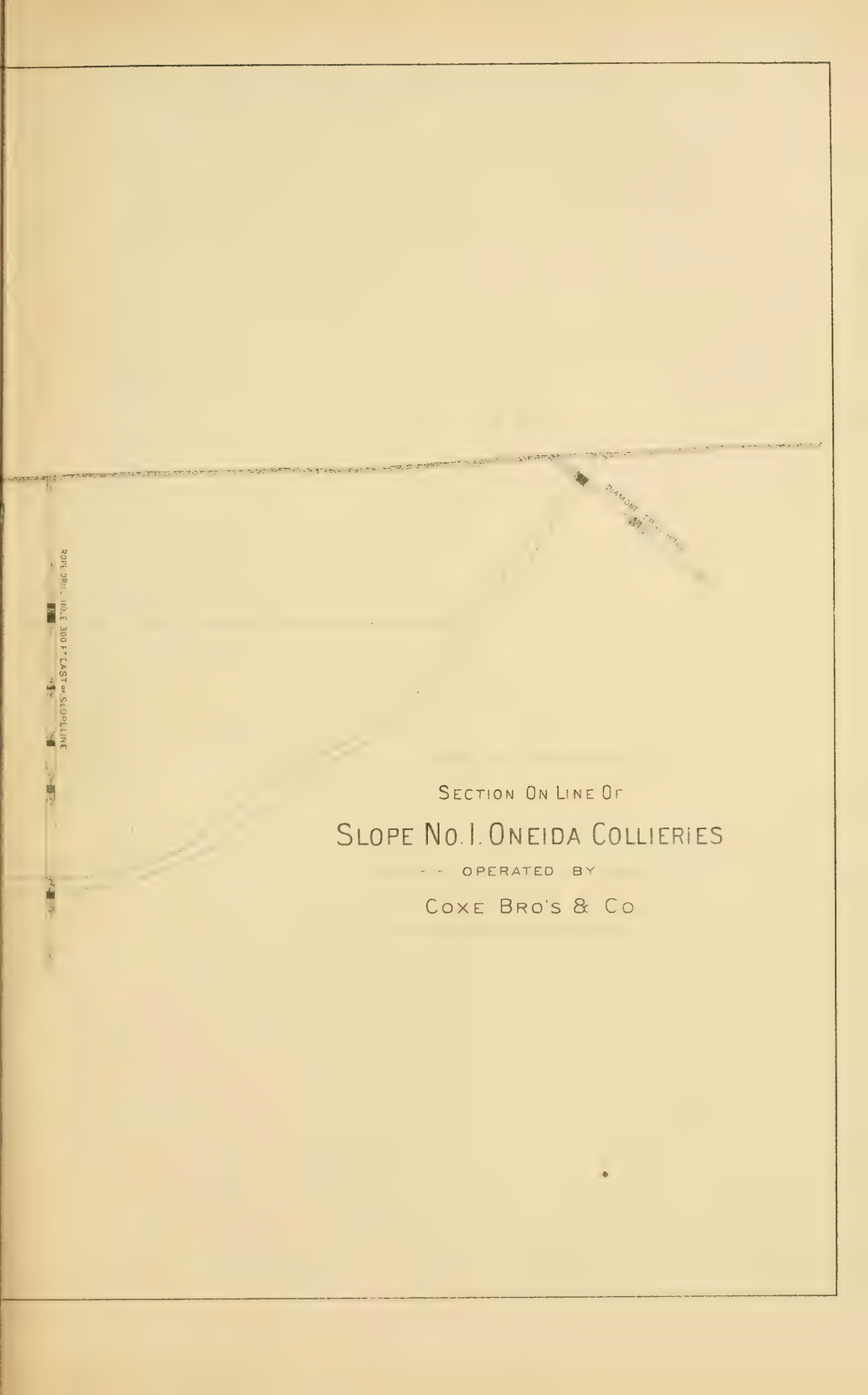
DIAMOND DRILL HOLE DEVELOPING OVERLAP

DIAMOND DRILL HOLE DEVELOPING OVERLAP

1ST LIFT TUNNEL

2ND LIFT TUNNEL

PROPOSED DRAINAGE TUNNEL INTO TOMHICKEN VALLEY



SECTION ON LINE OF

SLOPE No. 1. ONEIDA COLLIERIES

- - OPERATED BY

COXE BRO'S & CO

basin at the western end of the lease, to a depth of one hundred and eight and one-third yards; an engine is erected on the surface and the wire ropes are conducted through a shaft sixty feet deep to top of slope. Three (3) boilers, 30′x34″ have been put in place, and also a 6″x24″ pump.

At Silverbrook No. 1, a subterranean slope was sunk fifty yards to the first lift, and ninety yards to the second lift, and is now being sunk down to the basin. The self-acting plane west and north of the main tunnel across the basin was extended 300 feet.

A new slope (called No. 2 slope), 2,400 feet southwest of breaker, was sunk down 140 yards. Two lifts are turned off on the west side, and one on the east side. No. 4 stripping of the Mammoth vein has been opened and the removing of the surface for a new stripping on the same vein was started in August. A 100-horse power Dimmick & Smith boiler was added to the steam plant, and extensive repairs and alterations have been made to the breaker, thereby effecting greater improvements in the preparation of coal.

No. 2 colliery.—During the year mining developments having been going on, and a slope was sunk to the basin 720 feet in what is called the No. 6 vein.

The first lift, gangway west, has been opened, and gangways east and west on the lower lift are also opened.

In November the stripping of the Mammoth vein was begun in connection with this colliery, and already a large area of the coal bed has been uncovered.

The breaker in course of erection here, is expected to be ready to prepare coal in a few months, and is being fitted up with first-class modern machinery.

Five hundred horse power Babcock & Wilcox boilers, and a pair of hoisting engines 22″x36″ with double drums have been erected.

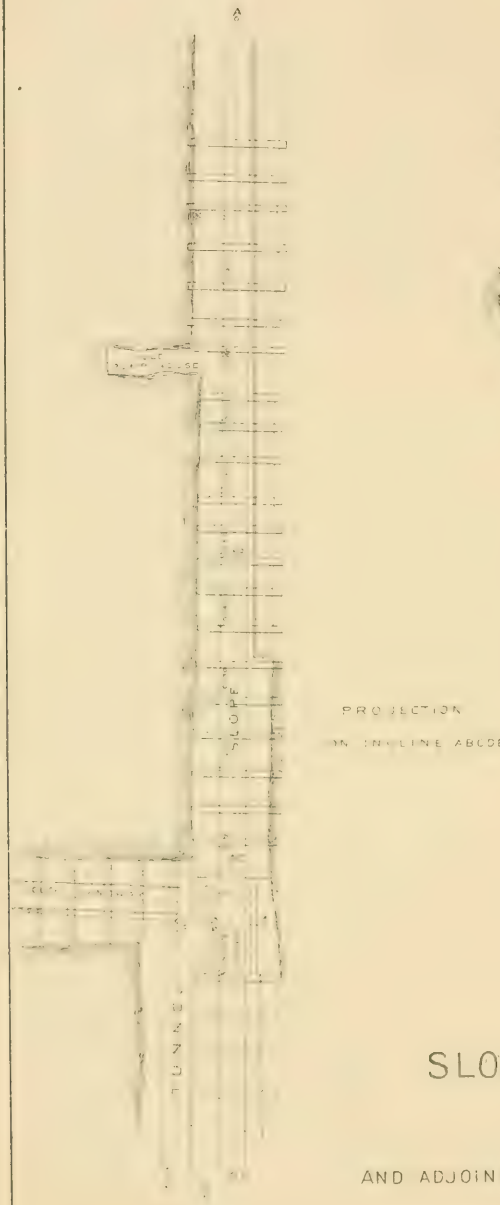
Oneida Colliery.

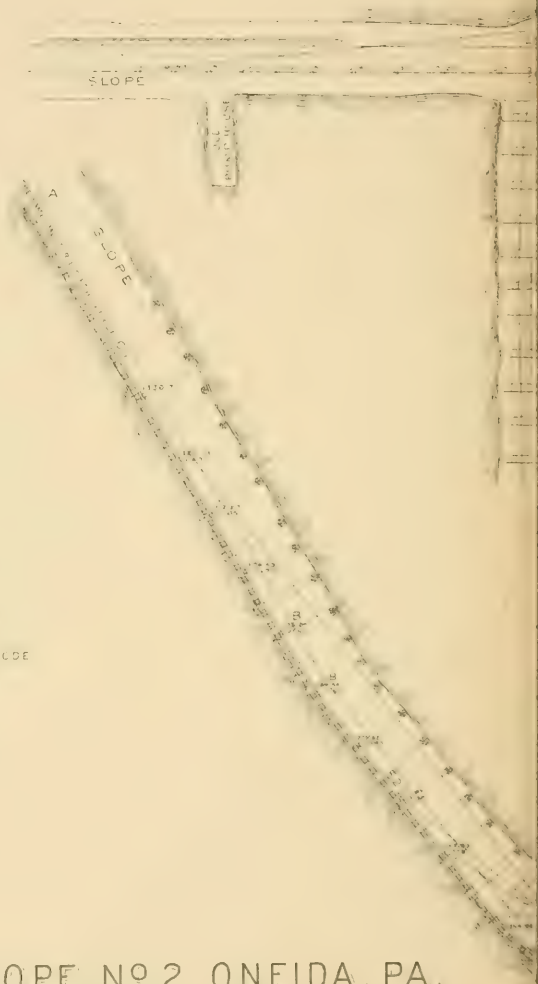
Oneida colliery, belonging to Coxe Brothers & Co., is situated on the Green mountain, north of Brandonville. About five years ago, or in the year 1886, the first explorations were begun, the whole property being then undeveloped and only crossed by a never completed state road, with four or five possession houses scattered through the brush, over an area of about 5,000 acres. Now this once state road is a well-kept road connecting with Tomhicken and Derringer collieries. Another road was built to Humboldt and Hazleton. The villages at or near the mine openings are connected by private roads which are extended to Shepton (Nelson City), a freeholder settlement within a quarter mile of Slope No. 2. Fifty-six blocks, or 172 houses, are built for the accommodation of the workmen, and the entire village will present a very neat appearance when the garden plots are cultivated. An artesian well is sunk about 500 feet on the saddle between Nos. 1 and 2 basins,

furnishing free flowing and excellent water for the town and boiler uses, and with the advantage of having good coal veins, this colliery has everything required to make Oneida a very prosperous mining settlement for many years to come. The mining operations at this colliery extend over an area of 5,200 acres, controlled through lease or joint ownership by Coxe Brothers & Co. This large property is at present opened by three slopes, sunk in what are considered three distinct basins, and will open the central and western part of the territory, while eventually two additional slopes will develop the eastern basin (which is a continuation of the Lehigh and Wilkesbarre Coal Company's Green mountain basin) and a small southern basin toward Brandonville. Opening and developing has been carried on very extensively since the year 1886. A slope opening is sunk a distance of 785 feet on the north dip of the Buck Mountain vein in No. 1 basin, and east of the breaker structure 1,200 feet.

About three hundred feet east of this slope a tunnel has been driven north from the first lift gangway across the basin to the Mammoth vein and extended to the south dip, cutting all the veins north to the Buck Mountain on the south dip. The Buck Mountain vein on the south dip could only be traced as a leader, and it was decided to continue the tunnel, and it was successful in cutting the Buck Mountain vein again in first-class condition, and which proved to be an inverted south dip, notwithstanding the second cutting of the Buck Mountain vein is on the north dip. The total length of tunnel across the basin from the Buck Mountain vein on the north to the Buck Mountain vein on the south dip is one thousand one hundred and fifty feet, pitch of vein is from fifty-two to twenty-five degrees.

From No. 2 lift of this slope a tunnel has been driven north across the basin and directly under the tunnel driven from the first lift, cutting the Buck Mountain vein on the south dip. Altogether seventeen gangways are in course of being driven. Six on the Buck Mountain vein and four on the Mammoth vein, on the first lift, four on the Buck Mountain vein on the second lift and on the third lift two gangways are being driven eastward and one westward, following the spoon in the Buck Mountain vein. The first lift tunnel cuts the Mammoth vein almost in the basin, so that no Mammoth coal can be got below the first level. Thickness of Mammoth vein, twenty-five feet, thickness of Wharton or Skidmore vein, three and one-half feet, thickness of Gamma or Seven-foot vein, three feet, thickness of Buck Mountain vein, twelve feet. Nineteen thousand feet of gangway were opened before the breaker was ready to prepare coal. A hoisting slope is sunk in line with the breaker dump to the first lift of No. 1 slope and all coal mined below this level is hoisted up No. 1 slope to this level and hauled westward underground to breaker slope and dumped into the gunboat and hoisted to breaker. In order to keep the gangways and other necessary openings working,



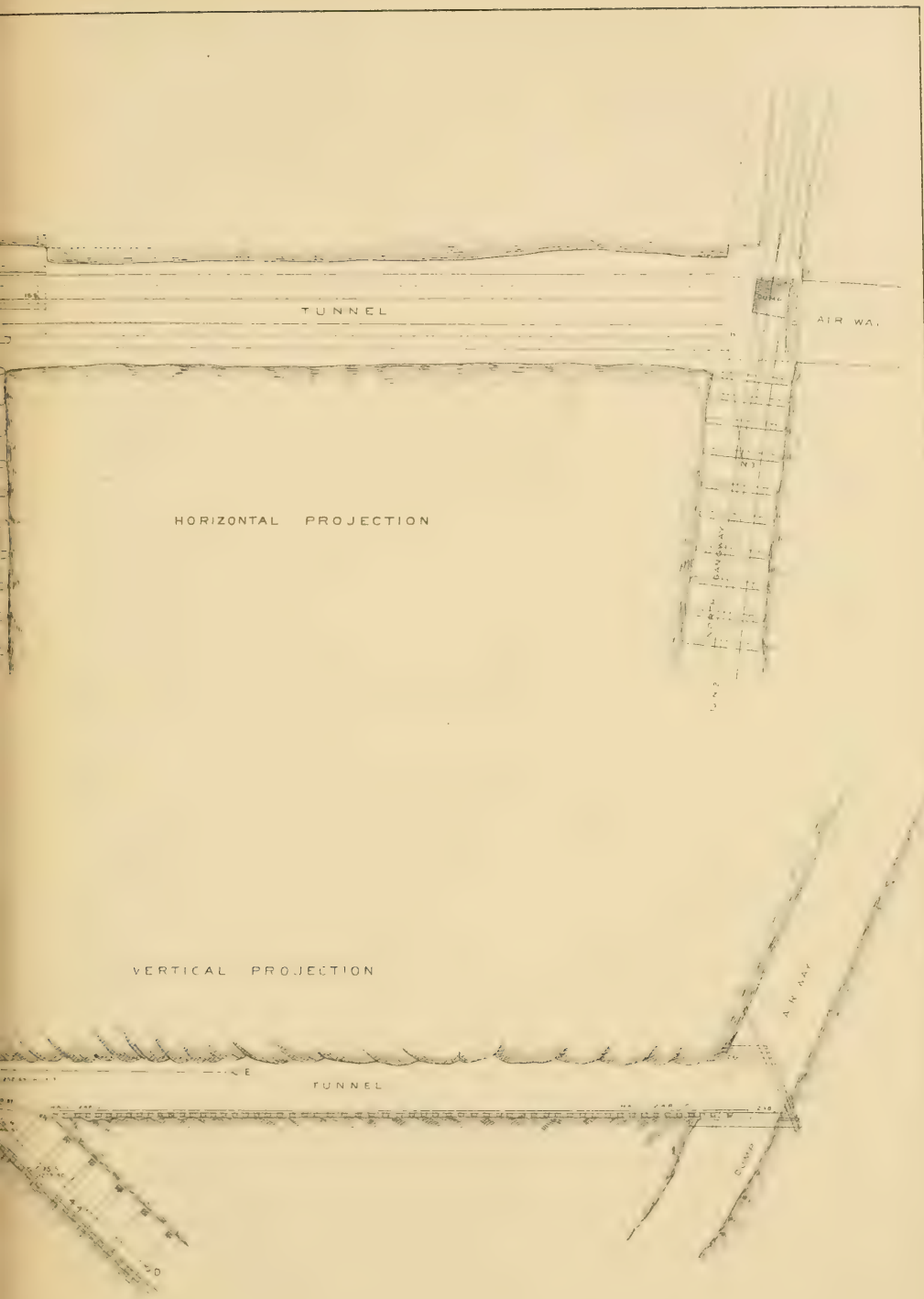


SLOPE Nº 2. ONEIDA, PA.

LOCATION OF TUNNEL

AND ADJOINING PORTIONS OF SLOPE AND GANGWAYS.

ONEIDA. NOVEMBER 1891


TUNNEL
AIR WA
HORIZONTAL PROJECTION
VERTICAL PROJECTION
TUNNEL

the coal from these openings prior to the starting of the breaker had all to be stocked to accomplish the driving of six thousand three hundred and thirty-three yards of gangway. The breaker was started in November and is at present mostly fed from this stock coal, which may be considered a very thorough test of its preparing capacity. Airways and travelling ways have been constructed to connect with all the gangways, and a Pelzer fan is erected on the south dip of the Buck Mountain vein, and without being run to its full capacity proved to be sufficient to give plenty of air to this large territory. This is the first fan of the Pelzer type that has been built in the United States. Mr. Pelzer is an engineer of prominence in the city of Dortmund, in the province of Westphalia, a large mining district in Prussia. No. 1 slope will now be used for hoisting men, timber and other material. A mule-way is driven upon a thirty degree pitch so that the mules are taken up and stabled outside. Pumping is done by temporary machinery in the meantime, as the whole mine will be drained by tunnelling from the Big Tomhicken Valley, a distance of not quite a mile. Mr. Thomas McNamara is inside foreman. Slope No. 2 Oneida has, like No. 1, been opened on the Buck Mountain vein and sunk a depth of five hundred and twenty-four feet to the basin on the north dip, pitching fifty-eight degrees. An airway is driven upon the south dip developing an undisturbed basin dipping westward and raising to the east. Over two thousand feet of gangway have been driven eastward on an average rise of five degrees. On account of local circumstances the bottom of slope was raised about forty feet above the synclinal axis, and a double track tunnel was driven from this point in the slope to the north dip through which the cars will be brought to the slope and taken by cage to the surface, and from here the coal will be hauled over an extension of the Delaware, Susquehanna and Schuylkill railroad to the breaker at slope No. 1 and hoisted by a self-acting barney arrangement to the breaker dump. No overlying vein has been proved on this section as the exploring was confined to determining the crop of the Buck Mountain vein.

No. 3 slope is located about a mile west of No. 2 slope and sunk on what is supposed to be the Gamma vein, or what is known as the Seven-foot vein in the Shenandoah and Mahanoy basins, and is sunk a distance of four hundred and seventy-five feet to the basin on the north dip. The section of this basin is very interesting; where compared with the section of No. 1 slope, it develops a slmilar northern overlap basin, and the tunnel which is driven north from bottom of slope has developed a nice Buck Mountain vein. The leader is also cut representing the south pitch of overlap basin and is expected to cut the Buck Mountain shortly on the north pitch of the overlap basin. The Mammolh vein which is twenty-five feet thick at No. 1 slope, is split here, and the provings show five independent workable veins, which are to be opened by a shaft now

in process of being driven up from the present bottom. The coal is to be hoisted through the shaft, and the present slope will be used for hoisting men and timber.

The coal will be hauled to No. 1 breaker over the same road as the coal from No. 2 slope. Mr. Tobias Seiwell is the inside foreman of Nos. 2 and 3 slopes.

The Steam Plant.

The steam plant consists of four nests of boilers, size 34″ diameter and 36′ long, each nest consisting of three cylinder boilers with two mud drums underneath 34″ diameter and 21′ long. A Dimmick & Smith boiler between the cylinder boilers and the stack and a cast iron water tube, feed water heater, which is placed in the stack. No. 3 buckwheat coal is used as fuel; the grate bar used is the McClane. The feed water passes under atmospheric pressure through the heater in the stack into the pump, and is pumped at a temperature of two hundred to two hundred and twelve degrees into the boilers, and the steam is carried into the breaker and to the hoisting engines by spiral welded eight-inch pipe, each section of which is thirty feet long. Three more sets of boilers will be put in at No. 1 slope. Boilers feed with pump or injector.

Hoisting.

There are two separate hoists in the breaker, and room for a third. The two western tracks come from the slope, the coal being hoisted in gunboats and dumped at the top of the breaker. The gunboats are hoisted by a pair of compound engines, the smaller cylinder being twenty-one inches and the larger thirty-six inches in diameter, stroke thirty-eight inches, both cylinders being steam jacketed and having balanced piston valves; diameter of drum ten feet three inches, length eight feet. The engine is provided with a reversing lever actuated by steam and a steam brake. The cars which come from a distance are hoisted on the two easternmost tracks to the top of the breaker by a pair of high-pressure geared engines of the ordinary type.

The Breaker Proper.

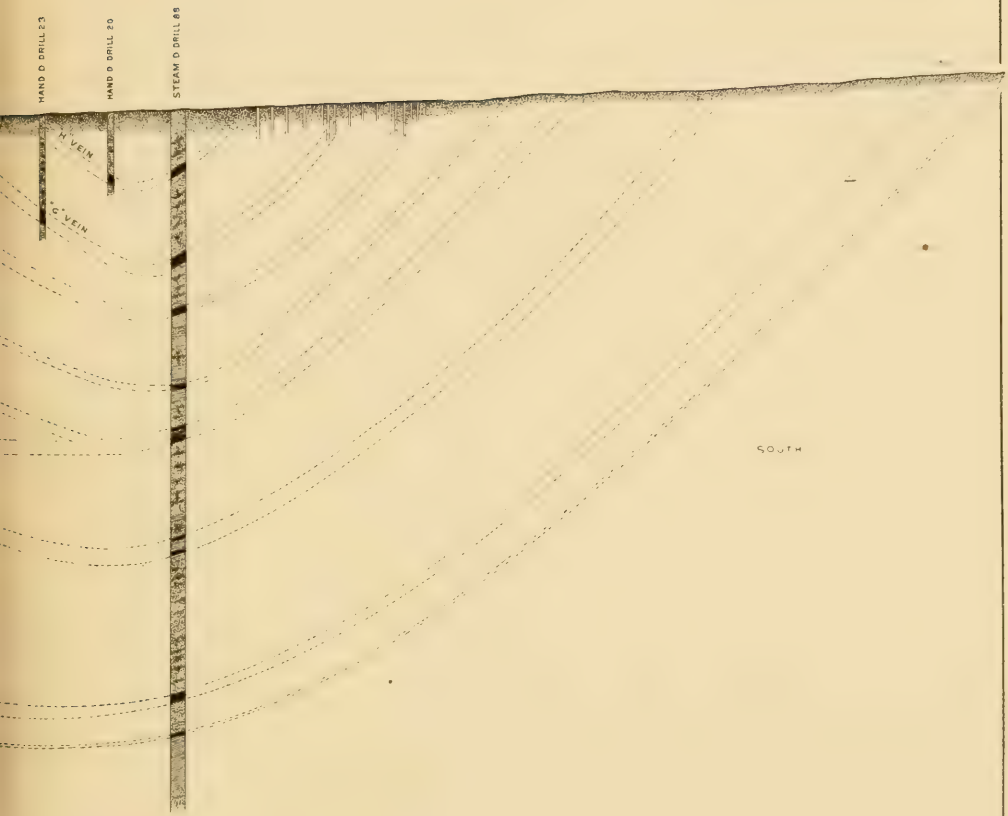
The general construction of the breaker is of iron, the walks around the interior and railings are also built of iron. The breaker machinery proper is run by a Carter & Allen condensing engine 9″x16″. The coal is brought by the cars or gunboats to the dump, and five dumps are provided if necessary to be used. The coal passes over the finger bars and oscillating bars and reaches the platform. Everything smaller

SECTI

ON LINE OF BORINGS

JAMES SMITH

ONEIDA COLLI



No. 3.

BOUNDARY LINE BETWEEN

CHRIST TROXEL

SLOPE No. 3.

than lump is taken out by these bars and goes into the mud screen pocket, the lump alone reaching the platform. On the platform the lump is divided into pure lump, which goes northward to the lump coal chutes; the slate which goes down the slate chutes into the slate pockets, and the slate coal which goes through the rolls into the mud screen pocket joining the small coal from the mines.

The pure lump on its way to the pockets can be separated into star lump and ordinary lump or if there is no demand for either, it passes through a set of rolls which make steamboat and the smaller sizes. The coal coming through these rolls passes through an inverted gyrating screen, which takes out the steamboat coal and allows the finer coal to go to the upper prepared coal screen. The steamboat coal goes to the pocket or through a set of steamboat rolls and then into the same prepared coal screen.

The mud screen coal is screened on two gyrating screens, and is divided into two parts by a horizontal plane, the upper part makes steamboat, broken and egg, and runs dry; the lower parts makes stove, chestnut, pea and buckwheat, and runs wet. The eastern and western halves of the breaker are exactly alike, one mud screen delivering coal to the west and the other to the east. The steamboat coal goes down a chute provided with a slate-picking chute where the pickers take out the slate and slaty coal and allow the pure steamboat coal to pass down a chute, either into the steamboat pocket or into the same steamboat rolls referred to above, and what passes through these steamboat rolls goes to the upper prepared coal screen referred to above. The slate and slate coal go to a platform where they are inspected, the pure slate being turned into the slate pocket and the slate coal going to the rebreaking plant on the ground on the level of the railroad, the same thing takes place with the broken and egg coal.

The stove coal on each side of the breaker passes over the automatic slate pickers, the round coal going to two jigs on each side and the flat coal to a third jig on each side. The same thing takes place with the chestnut. The pea coal goes directly to two jigs on each side of the breaker. There are six stove, six chestnut and four pea coal jigs altogether. The water and everything smaller than buckwheat goes to the double gyrating screen which makes Nos. 2 and 3 buckwheat and dirt, and which is composed of two boxes, one above the other. Each box of the screen is divided into three parts, making really six sets of screens in the one machine. The round chestnut coal when it comes from the four round chestnut coal jigs goes directly into the pockets. The round stove coal goes over a set of automatic slate pickers where men and boys take out the remaining slate. The flat chestnut and stove coal, after coming out of the jigs, goes over another set of automatic slate pickers which have a smaller slot than the upper ones and then passes to a set of

fixed slate picking chutes where the slate is taken out by hand. What goes through the automatic slate pickers goes down to the rebreaking plant on the ground. The slate picked out of the stove coal by the slate pickers is inspected at the bottom of the chute and all the doubtful coal goes also to the rebreaking plant on the ground while the slate goes to the the slate pocket.

The jigs used for stove, chestnut and pea have an automatic arrangement for the discharge of the slate similar in construction to that by which the coal is taken out of the jigs. The shines are taken out of the jigs by the box in the bottom with two gates, which enables the shines to discharge without losing much water. The upper prepared coal screen which receives nothing but pure steamboat broken up, merely screens the coal which is telegraphed direct to the pockets. It makes broken, egg, stove, chestnut, pea, Nos. 1, 2 and 3 buckwheat. This screen is so arranged that if the coal is damp water can be used in the lower half of it. Should there not be sufficent orders for broken and egg coal they go to the rebreaking broken and egg rolls and then to the lower prepared coal screen. These are situated below the upper prepared coal screen, so that the broken and egg made by them can also be rebroken. These make egg coal and all sizes smaller, the coal going to the pocket direct, as no slaty coal is allowed to go into these rolls and screen.

The Nos. 1, 2 and 3 buckwheat made from the mud screen are all jigged on twelve double feldspar jigs, on the same principle as other jigs used in jigging small coals, but are larger and so arranged as to take up less room in the breaker and have a drag to remove the pure coal from the jigs. The water and all the fine coal and other material drawn out of the bottom of the large jigs and the water and shines from the small jigs run to a tank from which the water and coal are elevated by a centrifugal pump to the bottom of Nos. 2 and 3 buckwheat screen, and whatsoever coal is in it is thus saved. The slate from the chestnut and stone jigs is telegraphed to tables where it is inspected, the coal picked out and put in the pockets and the slate allowed to fall in the slate pocket. A 12″x24″ piston valve engine runs the feldspar jigs, also a Westinghouse engine 8½″x8½″ running jigs.

All the water which has been used and contains the slimes passes to the large settling tank outside, where the bulk of the impurities settles in the pockets in the bottom, from which it is discharged by means of boxes with double slides (just as the slimes are discharged from the bottom of the jigs) into a pocket and then into slate cars. The principle upon which the settling is done is to bring the water and slime in at the bottom of the tank and to allow it to rise with a very low velocity which causes it to deposit most of the slime The water which flows over the edge of the settling tank is pumped back into two tanks in the upper part of the breaker which are also supplied with fresh water from the creek, pumped by a compound Coxe Knowles' pump, size 20″ and

12″ steam cylinders, 24″ stroke and 14″ plunger, though not enough for the needs of the breaker. All the water going from the settling tank, which is not needed in the breaker, flows off to the other side of the hill, being practically clean when discharged. A No. 12 Cameron pump repumps the water from settling to top of breaker. There is one loading track for gondolas, on which stove, chestnut, pea and Nos. 1, 2 and 3 buckwheat are loaded; one track on which stove, chestnut or pea can be loaded either in gondolas or in box cars; one track for broken and egg, on which the coal can be loaded in gondolas or box cars, and one track for lump and steamer, on which either gondolas or box cars can be loaded, and also one main railroad track which passes through the breaker. An electric plant is built, capable of furnishing three hundred lights for lighting the breaker. A Sterns band-saw mill has been erected, a blacksmith shop has been built with six forges, and a large carpenter shop and mule stable has been built. From the description given of Oneida breaker it will be readily seen that the Hon. E. B. Coxe has spared no expense, but only considered how he might build the structure so that he could economize the preparation of the coal with a view to prolong the production of coal from his coal area. This breaker has a capacity of preparing from two to three thousand tons daily, and taking the working days in a year to be 260, we can expect about 700,000 tons of coal shipped from this colliery yearly. I am not in possession of sufficient data as yet to say how long this shipment can be maintained, but would give it as my opinion from what I have seen developed, that it is good for twenty-five years.

Loading.

The loading lips are so arranged that after all the prepared coal larger than buckwheat has passed over the perforated plates to take out the fine coal made in the pockets, it can, if desired, be washed without the water that has done the washing becoming mixed with the fine coal taken out by the perforated plates. All the coal that comes from the perforated plates or screen bars at the loading lips, together with the slate coal telegraphed from all parts of the breaker, and which is broken by six pairs of rolls built on the ground, passes into a series of shovers hung into a trough 172 feet long, 18″ wide and 10″ deep, run by a 12x24″ piston valve engine, conveying the slate coal broken by these rolls into a pocket at the foot of the breaker plane, from which it is loaded into cars and hoisted to the top of the breaker, passing into the mud screen and thence to the jigs, etc. Anthracite coal, as it is mined and sent to the surface, is not in a condition to be sent to market until it is prepared, sized and practically made free from the impurities interspersed through the veins as they are found in their geological formation or structure. The economizing of mining and preparing our anthracite coals has given rise to considerable comment, and I think

that Mr. Coxe himself was appointed one of a commission to investigate and report whether any improvement could be instituted by which this valuable fuel could be economized in its preparation. All will admit that of late years a larger percentage of the smaller sizes have been realized in proportion to the quantity hoisted from the mines when compared with twenty years ago. Throughout my district improvements are made in the breakers to secure all available marketable coal while being prepared.

TABLE I.—*Showing Location of Collieries in the Sixth Anthracite District.*

NAME OF COLLIERY.	Name of Operator.	Location—Schuylkill county.	Name of Superintendent.	Postoffice Address.
Boston Run.	Philadelphia and Reading Coal and Iron Co.,	St. Nicholas.	John Veith, Esq.	Pottsville, Schuylkill county.
Bear Run.	do. do. do.	do.	do. do.	do. do.
Ellangowan.	do. do. do.	Maple Dale.	do. do.	do. do.
Elmwood.	do. do. do.	Mahanoy City.	do. do.	do. do.
Girard.	do. do. do.	Girardville.	do. do.	do. do.
Girard Mammoth.	do do. do.	Raven Run.	do. do.	do. do.
Gilberton.	do. do. do.	Gilberton.	do. do.	do. do.
Hammond.	do. do. do.	Girardville.	do. do.	do. do.
Indian Ridge.	do. do. do.	Shenandoah.	do. do.	do. do.
Knickerbocker.	do. do. do.	Yatesville.	do. do.	do. do.
Kohinoor.	do. do. do.	Shenandoah.	do. do.	do. do.
Mahanoy City.	do. do. do.	Mahanoy City.	do. do.	do. do.
North Mahanoy.	do. do. do.	do.	do. do.	do. do.
St. Nicholas.	do. do. do.	St. Nicholas.	do. do.	do. do.
Schuylkill.	do. do. do.	Mahanoy City.	do. do.	do. do.
Suffolk.	do. do. do.	St. Nicholas.	do. do.	do. do.
Shenandoah City.	do. do. do.	Shenandoah.	do. do.	do. do.
Turkey Run.	do. do. do.	do.	do. do.	do. do.
Tunnel Ridge.	do. do. do.	Mahanoy City.	do. do.	do. do.
West Bear Ridge.	do. do. do.	Mahanoy Plane.	do. do.	do. do.
East Bear Ridge.	do. do. do.	do.	do. do.	do. do.
Maple Hill.	do. do. do.	St. Nicholas.	do. do.	do. do.
Mahanoy Jig House.	do. do. do.	Mahanoy City.	do. do.	do. do.
Packer No. 2.	Lehigh Valley Coal Company.	Lost Creek.	Col. D. B. Brown.	Lost Creek, Schuylkill county.
Packer No. 3.	do. do.	Brownsville.	do. do.	do. do.
Packer No. 4.	do. do.	Lost Creek.	do. do.	do. do.
Packer No. 5.	do. do.	Rappahannock.	do. do.	do. do.
Honey Brook No. 4.	Lehigh and Wilkesbarre Coal Company,	Audenreid.	J. I. Hollenback, Esq.,	Audenreid, Pa.
Honey Brook No. 5.	do. do. do.	do.	do. do.	do.
Park No. 2.	Lentz, Lilly & Co.,	Park Place.	Edward Reese, Esq.,	Centralia, Pa.
Springdale.	do. do.	do.	do. do.	do.
William Penn.	William Penn Coal Company,	Shaft P. O.	William H. Lewis, Esq.,	Shaft, Pa.
Draper.	Draper Coal Company,	Gilberton.	H. L. Williams, Esq.	Pottsville, Pa.
Silver Brook	Silver Brook Coal Company.	Silver Brook.		
Buck Mountain.	Mill Creek Coal Company,	Buck Mountain.	Thomas D. Jones, Esq.,	Hazleton, Luzerne county.
Kehley's Run.	Thomas' Coal Company,	Shenandoah.	Thomas Baird, Esq.,	Shenandoah, Pa.
Glendon.	J. C. Hayden & Co.,	Mahanoy City.	William P. Daniell, Esq.,	Mahanoy City, Pa.
Primrose.	Nevills & Co.,	do.	James Wynn, Esq.,	do. do.
Lawrence.	Lawrence & Brown.	Mahanoy Plane.	Simon Moore, Esq.,	Frackville, Pa.
Cambridge.	Cambridge Coal Company,	Shenandoah.	William James, Esq.,	Shenandoah, Pa.
Furnace.	Seaman Bros. & Co.,	Gilberton.	Mahlon Gerber, Esq.,	Frackville, Pa.
Oneida.	Coxe Bros.,	Nelson City.	Hon. E. B. Coxe.	Drifton, Luzerne county.

TABLE II—*Gives the total number of tons of coal mined in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Sixth Anthracite District for the year ending December 31, 1891.*

NAMES OF COLLIERIES.	Location.	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Pounds of dynamite.
Boston Run	St. Nicholas	192,906.17	183,906.17	249.75	458		7	3,963	24	40		5,550
Bear Run	do.	151,182.02	143,182.02	171.20	679	1	3	4,455	24	62		6,030
Ellengowan	Maple Dale	399,045.03	380,045.03	235.05	961	4	6	8,274	36	94		5,863
Elmwood	Mahanoy City	127,088.06	121,088.06	232.40	373	1	3	4,326	16	39		2,154
Girard	Girardville	124,366.12	118,366.12	225.20	402	5	1	988	39	39		9,785
Girard Mammoth	Raven Run	116,660.03	110,666.03	243.40	364	1	1	1,974	22	42		2,377
Gilberton	Gilberton	243,926.12	231,926.12	248.00	685	3	2	4,455	48	50		14,100
Hammond	Girardville	209,618.07	199,618.07	247.65	599	1	2	5,177	36	48		4,316
Indian Ridge	Shenandoah	216,560.13	206,560.13	227.50	708	2	3	6,103	24	75		5,318
Knickerbocker	Yatesville	262,516.05	250,516.05	245.60	662	1	3	5,597	25	42		8,542
Kohinoor	Shenandoah	133,413.16	127,413.16	203.35	467		2	4,068	33	40		3,304
Mahanoy City	Mahanoy City	100,165.10	87,165.10	163.00	468			2,348	30	45		1,382
Maple Hill	St. Nicholas				346	1	1	722	16	10		26,986
North Mahanoy	Mahanoy City	198,377.08	188,377.08	244.10	602	2	2	5,380	16	56		3,281
St. Nicholas	St. Nicholas	174,290.08	165,290.08	248.00	486	2	1	4,313	38	29		6,398
Schuylkill	Mahanoy City	100,144.02	95,144.02	231.80	357	1	3	2,978	20	34		1,541
Suffolk	St. Nicholas	313,203.14	298,203.14	248.00	887	3	3	10,092	18	66		1,782
Shenandoah City	Shenandoah	200,979.03	180,979.03	191.15	687	3	7	4,447	20	76		3,903
West Bear Ridge, East Bear Ridge	Mahanoy Plane	164,896.18	156,896.18	205.05	727	3	4	2,727	48	53	1	15,634
Turkey Run	Shenandoah	161,293.11	153,293.11	241.90	401	2	4	3,455	12	47		4,215
Tunnel Ridge	Mahanoy City	152,386.19	143,386.19	216.25	546		2	4,832	24	40		1,971
West Shenandoah	Shenandoah	156,742.18	147,742.18	245.35	462	2	2	3,928	16	48		823
Vehleys Run	do.	122,367.15	120,150.06	255.75	318	1		4,505	24	28	1	7,150
Packer No. 2	Lost Creek	120,384.15	110,101.15	151.20	361		2	3,146	22	25	1	3,281
Packer No. 3	Brownsville	157,127.13	144,997.13	173.50	415	3		2,912	24	35	2	1,683
Packer No. 4	Lost Creek	106,018.12	90,237.12	149.20	313	2	1	2,539	30	32	2	1,376½
Packer No. 5	Rappahannock	116,080.18	101,908.18	150.95	458		2	2,755	28	37	2	6,867½
William Penn	Shaft P. O.	281,000.00	262,413.00	252.00	591	4	1	6,000	46	60		6,000
Honey Brook No. 4	Audenried	184,788.19	182,059.00	260.00	411	2	6	4,789	32	40	1	12,898
Honey Brook No. 5	do.	250,036.13	248,008.13	262.00	522	1	6	3,506	57	41	4	30,927

Buck Mountain,	Buck Mountain P. O.	156,302.12	140,242.12	202.20	342	1	2	3,998	24	36	1,300
Primrose	Mahanoy City,	95,316.09	82,116.09	221.00	298	1		3,025	22	27	4,450
Silver Brook,	Silver Brook,	148,900.00	135,892.07	213.00	458	3	5	2,870	28	44	5,750
Glendon,	Mahanoy City,	93,271.00	84,553.00	211.10	330	1	3	1,972	24	46	5,512
Lawrence,	Mahanoy Plane,	130,868.08	124,868.08	200.00	330	1	5	2,000	44	46	6,000
Draper,	Gilberton,	182,521.08	181,666.08	264.00	447		4	2,000	40	38	8,800
Park No. 2,	Park Place,	253,790.12	228,212.12	212.90	570	3		7,203	46	75	
Springdale,	do.	87,530.02	76,075.02	172.90	407	2	2	2,101	31	47	
Furnace,	Gilberton,	10,161.19	10,161.19	111.00	36			1,000	2	5	
Cambridge,	Shenandoah,	3,591.14	1,592.09	139.75	18			120	2	5	500
Sydney Washery,*	Maiseville,	72,074.02	72,074.02								
Stoddart Washery, †	Gilberton,	1,569.18	1,569.18								
Oneida,	Nelson City,	19,486.00	6,063.06	36.00	320	3	2	1,232	27	50	

*Reppelier & Co. †Beddall Bros. & Co..

TABLE III.—*Showing the number of each class of Employes at each Colliery in the Sixth Anthracite District during the year 1891.*

NAMES OF COLLIERIES.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand total inside and outside.
	Inside foremen.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside	
Boston Run	5	131	39	64	13	6	258	2	11	16	87	83	1	200	458
Bear Run	4	110	186	109	24	9	442	2	5	12	137	80	1	237	679
Ellengowan	11	304	98	92	36	12	553	2	13	20	257	113	3	408	961
Elmwood	4	113	34	52	18	1	222	1	5	6	94	44	1	151	373
Girard	4	57	42	106	11	8	228	1	25	25	76	55	2	184	402
Girard Mammoth	2	98	21	64	12	3	200	1	27	14	72	49	1	164	364
Gilberton	6	196	68	108	18	7	403	2	7	22	146	103	2	282	685
Hammond	6	148	46	103	15	7	325	2	15	20	139	96	2	274	599
Indian Ridge	8	173	79	103	50	8	421	2	8	21	164	89	3	287	708
Knickerbocker	4	170	44	64	14	4	300	2	19	18	197	124	2	362	662
Kohinoor	6	154	78	48	24	7	317	2	7	21	71	47	2	150	467
Mahanoy City	4	90	74	74	34	8	284	1	5	18	107	51	2	184	468
Maple Hill	2	31	78	77	4	5	197	1	56	9	. . .	82	1	149	346
North Mahanoy	4	140	109	71	33	14	371	1	6	9	134	79	2	231	602
St. Nicholas	5	100	107	71	17	8	308	. . .	4	10	94	69	1	178	486
Schuylkill	3	99	42	56	14	9	223	1	5	11	67	49	1	134	357
Suffolk	5	266	127	114	22	15	549	2	9	20	163	140	4	338	887
Shenandoah City	6	173	66	90	42	17	394	2	9	22	163	95	2	293	687
West Bear Ridge	4	221	71	125	26	15	462	2	18	25	139	138	3	325	727
East Bear Ridge															
Turkey Run	3	86	77	61	18	4	249	2	5	7	59	77	2	152	401
Tunnel Ridge	4	166	39	89	22	12	332	1	5	10	92	104	2	214	546
West Shenandoah	5	117	56	56	18	3	255	2	12	14	84	93	2	207	462
Buck Mountain	1	132	39	15	15	1	203	1	6	13	77	39	3	139	342
Packer No. 2	1	81	32	64	13	12	203	1	6	11	65	73	2	158	361
Packer No. 3	1	128	53	75	13	6	276	1	8	10	54	65	2	139	415
Packer No. 4	1	106	20	60	15	2	204	1	8	11	38	50	1	109	313
Packer No. 5	2	104	38	94	18	6	262	2	10	13	93	76	2	196	458
William Penn	3	110	105	60	28	20	326	2	15	16	180	50	5	268	574
Park No. 2	2	128	110	71	27	12	350	1	15	23	112	62	7	220	570
Springdale	1	112	24	50	10	9	206	1	9	15	95	80	1	201	407

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TABLE IV.—*List of Fatal Accidents occurring in the Mines of the Sixth Anthracite District for the year ending December 31, 1891.*

Date of accident.	NAME OF PERSON INJURED.	Age.	Married or single.	No. of orphans.	Name of Colliery.	Location.	Date of investigation.	Nature and Cause of Accident in Brief.
Jan. 3.	William Johnson,	34	S.	..	Silverbrook,	Silverbrook,	Jan. 3.	Engineer; was taking pump machinery down slope and fell off gunboat to bottom and instantly killed.
15.	John Glump,	12	S.	..	Park No. 2,	Park Place,	15.	Laborer; killed by a fall of coal.
Feb. 12.	John Olshoskie,	26	M.	..	Ellengowan,	Mapledale,	Feb. 14.	Miner; burned by powder; died in Miners' hospital on the 22d.
12.	John H. Rice,	28	S.	..	Ellengowan,	Mapledale,	14.	Miner; burned by powder; died in Miners' hospital on the 17th.
19.	Joseph Bogdouwich,	24	S.	..	Oneida No. 3,	Nelson City,	24.	Laborer; killed by falling down slope.
23.	Joseph Kelts,	28	S.	..	Indian Ridge,	Shenandoah,	25.	Miner; fatally injured by a premature blast; died in Miners' hospital March 4.
25.	James Jackson,	35	M.	4	Girard Mammoth,	Raven Run,	26.	Miner; killed by a fall of coal.
Mar. 3.	Joseph Powell,	24	M.	1	Turkey Run,	Shenandoah,	March 3.	Driver; was driving his mules at an unusual speed and when at a curve, at bridge which crosses a creek, car jumped the track taking him and mules over the bridge and he was killed instantly.
4.	Steve Knuckle,	30	S.	..	St. Nicholas,	St. Nicholas,	4.	Outside laborer; was run over by the gunboat on dirt plane and instantly killed.
17.	Richard Paddock,	45	S.	..	Girard,	Girardville,	17.	Rock miner; killed while tamping a hole with iron bar, dynamite exploded.
17.	William Mulhern,	24	S.	..	Girard,	Girardville,	17.	Rock miner; killed at the same time with Paddock.
22.	Patrick Fallon,	25	M.	3	Knickerbocker,	Yatesville,	26.	Miner; fatally injured by a fall of coal; died in Miners' hospital April 1.
23.	Matt. Jackobitch,	30	M.	1	Gilberton,	Gilberton,	23.	Miner; fatally injured by a fall of coal and died in Miners' hospital on the 24th.
26.	Michael Walsh,	48	M.	2	Shenanboah City,	Shenandoah,	26.	Laborer; killed by a piece of timber falling down shaft, torn off by the ascending bucket; the bucket was not properly sent away from the bottom.
Apr. 6.	Patrick Downey,	45	M.	2	Shenandoah City,	Shenandoah,	April 7.	Miner; fatally burned by an explosion of gas, died on the 15th.
6.	John Leigman,	34	M.	..	Primrose,	Mahanoy City,	8.	Miner; fatally burned by an explosion of gas and died on the 11th.
8.	Albert Matska,	31	S.	..	St. Nicholas,	St. Nicholas,	9.	Laborer; killed by a fall of slate.
13.	William Lesisky,	28	S.	..	North Mahanoy,	Mahanoy City,	15.	Laborer; fatally injured by a fall of slate, died August 1.
20.	Walter White,	20	S.	.	West Shenandoah,	Shenandoah,	20.	Spragger; fatally injured under loaded cars; died from his injuries same day.
27.	John Bodsnick,	25	S.	..	Silverbrook,	Silverbrook,	27.	Laborer; killed by a fall of coal and slate.

May	5,	Peter Smeltzer,	54	S.	..	Packer No. 3,	Brownsville,	May	6,	Miner; killed by falling from a car while riding up slope.
	19,	George Thomas,	24	S.	..	Kehley's Run,	Shenandoah,		20,	Miner; killed by a fall of coal.
	25,	John Medley,	25	M.	3	Suffolk,	St. Nicholas,		25,	Miner; fatally burned by powder, died in Miners' hospital June 4.
	29,	William James,	20	S.	..	Elmwood,	Mahanoy City,		30,	Slate picker; killed by being caught in the machinery and wound around screen shaft.
June	3,	Martin Baluta,	29	S.	..	Honeybrook No. 4,	Audenried,	June	4,	Miner; killed by a fall of coal.
	4,	George McAndrew,	23	S.	..	Hammond,	Girardville,		6,	Starter; killed by the coal at battery rushing on him.
	8,	James Mulgrew,	16	..	..	Bear Ridge,	Mahanoy Plane,		8,	Car runner; killed by being thrown under the cars, the trip having jumped the track.
	25,	Joseph Woshel,	26	S.	..	Bear Ridge,	Mahanoy Plane,		26,	Miner; fatally injured by a fall of coal; died July 2.
	26,	James Morgan,	51	M.	5	Gilberton,	Gilberton,		.....	Miner; strained himself lifting a collar and died on the 28th.
July	1,	Mick Micko,	25	M.	1	Turkey Run,	Shenandoah,	July	3,	Slate picker; killed by being caught in the breaker machinery.
	2,	John Pacutsky,	26	M.	..	Ellangowan,	Mapledale,		3,	Miner; killed with coal flying from shot.
	13,	George Coloskey,	50	S.	..	North Mahanoy,	Mahanoy City,		13,	Laborer; killed by a fall of slate in gangway, the fault of the miner not timbering.
	21,	Daniel Goodrich,	16	..	..	Maple Hill,	St. Nicholas,		21,	Tool carrier; fell into water lodgement unobserved and was drowned.
	21,	John Shekerack,	25	S.	..	Honeybrook No. 5,	Audenried,		22,	Starter; smothered; the coal rushed on him in chute and he was dead before he could be rescued.
	22,	John Cartuskie,	24	S.	..	Gilberton,	Gilberton,		23,	Starter; killed by the coal rushing out of breast on him.
	28,	John McAndrew,	25	S.	..	Bear Ridge,	Mahanoy Plane,		29,	Laborer; killed by a fall of slate.
Aug.	1,	George Bell,	27	S.	..	Glendon,	Mahanoy City,	Aug.	3,	Miner; killed by a fall of coal.
	11,	Michael Sweitzer,	23	S.	..	Park No. 2,	Park Place,		12,	Miner; killed by a fall of coal.
	17,	George Mallons,	39	M.	7	Girard,	Girardville,		18,	Repairman; fatally injured by being struck on the head by a piece of timber while examining the slope pulleys; died August 23.
	22,	Joseph Pifer,	26	M.	1	Packer No. 4,	Lost Creek,		24,	Miner; fatally burned by an explosion of gas; died same day.
	22,	Anthony Miskill,	45	M.	3	Packer No. 4,	Lost Creek,		24,	Miner; fatally burned by an explosion of gas; died same day.
	28,	John Dousoskefske,	25	S.	..	Suffolk,	St. Nicholas,		29,	Laborer; killed by a fall of coal.
Sept.	2,	George Rolin,	30	M.	..	William Penn,	Shaft,	Sept.	3,	Miner; killed by going back to a shot; he thought the squib had missed fire.
	5,	Daniel Reese,	21	S.	..	West Shenandoah,	Shenandoah,		5,	Bottom man; killed instantly by being squeezed between cars which he attempted to couple while in motion.
	21,	John Klatt,	43	M.	3	Indian Ridge,	Shenandoah,		21,	Miner; killed by a fall of coal.
	23,	Adam Blass,	43	M.	4	Girard,	Girardville,		24,	Miner; killed by a fall of coal.
	25,	Daniel Anthony,	36	M.	4	Springdale,	Mahanoy City,		27,	Miner; fatally injured by a fall of coal and died on the 30th.
Oct.	2,	Joseph Martzucanis,	22	S.	..	William Penn,	Shaft,	Oct.	3,	Miner; killed by a shot; he did not give the necessary time for the shot to explode.
	13,	George Slamanski,	25	S.	..	Packer No. 3,	Brownsville,		14,	Miner; killed by a fall of top rock.
	16,	Frank Shevler,	40	S.	..	Lawrence,	Mahanoy Plane,		16,	Laborer; killed by falling down slope.
	20,	Joseph Graser,	40	M.	2	Silverbrook,	Silverbrook,		22,	Laborer; killed by a fall of coal.
	29,	George Cowilick,	30	M.	6	Oneida,	Nelson City,		30,	Laborer; burned to death; he took a can of benzine to fill his lamp when it ignited causing his death.
Nov.	2,	John Reddy,	55	M.	4	Packer No. 3,	Brownsville,	Nov.	2,	Miner; killed by a fall of coal and slate.
	7,	Washington Huntzinger,	35	M.	4	Suffolk,	St. Nicholas,		9,	Laborer; fatally injured by a fall of coal; died in the Miners' hospital on the 8th.
	16,	Adam Mank,	16	..	..	Bear Run,	St. Nicholas,		17,	Switch boy; fatally injured between cars and brattice; died in Miners' hospital December 2.
	28,	John Harrington,	45	M.	6	Springdale,	Mahanoy City,		30,	Miner; drowned in water level drift between Springdale and Park No. 2 slope.
	30,	Evan Williams,	14	..	..	Shenandoah City,	Shenandoah,	Dec.	2,	Slate picker; fatally injured by falling down breaker steps; died December 20.

TABLE IV—*Continued.*

Date of accident.	NAME OF PERSON INJURED.	Age.	Married or single.	No. of orphans.	Name of Colliery.	Location.	Date of investigation.	Nature and Cause of Accident in Brief.
Nov. 20.	Carl Ulrich.	40	M.	..	William Penn.	Shaft.		Outside laborer; killed instantly by railroad cars while cleaning track under the breaker.
Dec. 2.	Bernard Murphy.	35	M.	4	Schuylkill.	Mahanoy City.	Dec. 5.	Miner; killed by a fall of coal.
15.	George Motto.	35	M.	..	Honeybrook No. 4.	Audenried.	17.	Miner; killed by a fall of coal.
15.	George Stanelis.	45	S.	..	Buck Mountain.	Buck Mountain.	16.	Miner; killed by a fall of coal.
16.	Mike Bollock.	25	S.	..	Oneida.	Nelson City.	17.	Oiler; killed by falling from platform while tightening bolts on gyrating screen; wrench slipped.
17.	John Cropenski.	52	M.	6	Ellengowan.	Mapledale.		Miner; killed by a fall of coal.
28.	Joseph McAlandy.	34	M.	..	Girard.	Girardville.	31.	Miner; fatally injured by a premature blast and died in Miners' hospital 6th January, 1892.
31.	William Cashon.	36	S.	..	Park No. 2.	Park Place.	Jan. 2, '92.	Miner; killed by a fall of coal.

TABLE V.—*List of Non-Fatal Accidents occuring in and about the Mines of the Sixth Anthracite District for the year ending December 31, 1891.*

Date of accident.	NAME OF PERSON INJURED.	Age.	Married.	Number of children.	Name of Colliery.	Location.	Date of investigation.	Nature and Cause of Accident in Brief.
Jan. 2.	Martin Dixon.	22	S.	...	Packer No. 5.	Rapphannock.	Jan. 3.	Car runner; slightly burned on face and hands by an explosion of gas.
2.	Benjamin Granger.	35	M.	...	do.	do.	Jan. 3.	Miner; slightly burned on face and hands by an explosion of gas.
3.	Michael Bloselivek.	30	S.	...	Ellengowen.	Maple Dale.	.....	Miner; head and shoulders cut by fall of coal.
5.	Luke Coogan.	32	M.	...	Hammond.	Girardville.	Jan. 6.	Fire boss; slightly burned on face and hands by an explosion of gas while examining an air-way with a naked lamp.
5.	Thomas Watson.	35	M.	2	do.	do.	Jan. 6.	Assistant fire boss; face and hands burned same time as Luke Coogan.
5.	John Parry.	38	M.	...	do.	do.	Jan. 6.	Miner; face and hands slightly burned at same time as Coogan and Watson.
6.	William H. Winkle.	32	S.	...	Kohinoor.	Shenandoah.	.....	Carpenter; leg broken; belt pulley fell on him.
9.	John Dunn.	30	S.	...	Elmwood.	Mahanoy City.	Jan. 12.	Laborer; bruised on body by a fall of slate.
12.	Thomas Gulliford.	...	...	...	Girard.	Girardville.	.....	Miner; leg injured; struck by coal flying from shot.
12.	John Fershock.	...	...	...	Schuylkill.	Mahanoy City.	.....	Loader; hips injured; caught between car and door frame.
12.	Charles Terrill.	...	...	...	Boston Run.	St. Nicholas.	.....	Miner; body injured by a fall of coal; not seriously.
13.	Frank Smith.	...	...	...	Kohinoor.	Shenandoah.	.....	Laborer; leg broken by a fall of coal.
19.	Sam. Williams.	...	...	...	Shenandoah City.	do.	.....	Miner; side injured by explosion of dynamite.
Feb. 6.	Henry Franks.	17	S.	...	Boston Run.	St. Nicholas.	.....	Slate picker; foot crushed by being caught in the jigs.
18.	John Hargraves.	...	...	...	do.	do.	.....	Miner; leg badly bruised by a rush of coal while "robbing."
20.	Isaac Bevan.	...	...	...	do.	do.	.....	Fan boy; fell under car injuring his arm.
21.	Bran 246.	23	S.	...	Honey Brook No. 4.	Audenried.	.....	Laborer; flesh wounds on back but not serious; caught between cars.
21.	Hugh Harkins.	24	S.	...	Indian Ridge.	Shenandoah.	Feb. 23.	Laborer in subterraneous; shaft and was engaged timbering when he fell a distance of nineteen feet into three feet of water; injured internally but not seriously.
23.	Jas. McLane.	...	...	...	Bear Ridge.	Mahanoy Plane.	.....	Steel carrier; thrown from a mule and severely bruised on hand and body.
28.	Patrick Mooney.	25	S.	...	Silverbrook.	Silverbrook.	.....	Laborer; loss of eye caused by an explosion of dynamite caps.

TABLE V—*Continued.*

Date of accident.	NAME OF PERSON INJURED.	Age.	Married.	Number of children.	Name of Colliery.	Location.	Date of investigation.	Nature and Cause of Accident in Brief.
Mar. 3.	Harry Beadle,	18	S.		Turkey Run,	Shenandoah,		Laborer; leg broken; he with a young man, Joseph Powell, was running a dumper from dirt bank to breaker at an unusual rate of speed, and when crossing a bridge over the creek just where there is a curve on the track the dumper jumped the track, taking Beadle, Powell, mules and dumper over the trestling, killing Powell and the mules.
3.	Barney Matthews,				Schuylkill,	Mahanoy City,		Miner; collar bone broken by being crushed between cars.
4.	Isaac J. Dunstan,	32	M.	3	Packer No. 4,	Lost Creek,		Headman; while barring piece of coal out of car the bar slipped striking him on side of head; injury not serious.
5.	Evan Hurton,	26	M.		Honey Brook No. 5,	Audenried,		Outside laborer; while loading stock coal a piece rolled down upon him breaking his leg.
6.	Michael Daniel,				Knickerbocker,	Yatesville,		Loader; Ankle broken by coal rolling down "manway."
16.	John Yanka,				Tunnel Ridge,	Mahanoy City,		Rockman; leg broken by being caught by rock damper.
21.	William Harlor,	15			Glendon,	do.		Door boy; severe flesh wounds on leg by being caught between bumpers of cars.
23.	Stiney Cowiskie,				Gilberton,	Gilberton,		Laborer; body and limbs bruised by a fall of coal.
27.	James Haligan,	41	M.	6	Draper,	do.		Miner; leg broken by a fall of coal.
28.	John T. Williams,				Shenandoah City,	Shenandoah,		Carpenter; leg injured by being caught between timber and car.
April 1.	Henry Motz,				Turkey Run,	do.		Miner; head and back injured by a fall of coal.
13.	David Reese,				Boston Run,	St. Nicholas,		Miner; leg broken by a fall of coal.
13.	Andrew Hilgan,	25	S.		do.	do.		Miner; burned on face and hands by an explosion of gas; he went into a neighboring breast for an axe with naked lamp.
29.	John Flynn,				Knickerbocker,	Yatesville,		Miner; collar bone broken; struck by coal.
30.	Jacob Zimmerman,	41	M.	2	Oneida No. 1 slope,	Nelson City,		Laborer; arm broken by being caught between prop and truck in slope.
May 5.	Anthony Nolan,	45	M.	6	Springdale,	Mahanoy City,		Laborer; the dirt bank slid on him as he was engaged levelling it off for car track, breaking his leg.
11.	William H. Pierce,	20	S.		Lawrence,	do.		Driver; squeezed between car and collar leg.
19.	John Goodman,	23	S.		Honey Brook No. 4,	Audenried,		Laborer; leg broken by fall of clod.
19.	Henry Mullarkey,				Girard Mammoth,	Raven Run,		Slate picker eye injured by being struck by a piece of coal.
26.	John Mullahey,	21	S.		Shenandoah City,	Shenandoah,		Car runner, skull fractured; car jumped the track, jamming him between "rib" and car.

	27.	William Miller,				Turkey Run,	do.	Miner; leg broken by fall of coal.
June	3.	Michael Yerkavich,	27	M.		Honey Brook No. 5,	Audenried,	Laborer; bruised on body and legs by a fall of coal.
	5.	Michael Welsh,	43	M.	6	Shenandoah City,	Shenandoah, June 8,	Miner; face and hands burned by an explosion of powder while filling a cartridge.
	5.	James Tobin,	47	M.	8	do. do.	do. June 8,	Miner; face and hands burned at same time and under same conditions as Welsh.
	8.	Henry Cook,	24	S.		Draper,	Gilberton,	Loader; leg broken by a fall of coal.
	16.	Patrick Dimleary,				Honey Brook No. 4,	Audenried,	Patcher; arm severely cut while spragging car, his arm was drawn under the wheel.
	18.	Edward Rice,				Bear Run,	St. Nicholas,	Miner; leg broken by a fall of coal.
	18.	Charles Thomas,	28	S.		William Penn,	Shaft,	Miner; leg broken by a fall of coal.
	23.	Haam Wolkis,				Schuylkill,	Mahanoy City,	Miner; head bruised by a fall of slate and coal.
	24.	John Menovick,	40	M.	1	Silverbrook,	Silverbrook,	Laborer; arm broken by being caught between cars.
	24.	John Pough,	25	S.		do.	do.	Laborer; leg broken by being struck by a lump of coal in chute.
	26.	Charles Kest,	50	M.	6	Springdale,	Mahanoy City,	Miner; burned slightly on face and hands by an explosion of gas.
	30.	Patrick Kelly,	32	S.		Ellengowan,	Mapledale,	Repairman; squeezed between cars and chute.
July	2.	John Williams,	22	S.		Maple Hill,	St. Nicholas,	Driver; foot mashed between cars.
	11.	George Wungura,				Ellengowan,	Mapledale,	Miner; body severely injured by a fall of slate.
	11.	Michael Wungura,				do.	do.	Miner; body severely injured by a fall of slate.
	15.	T. Gradwell,				West Shenandoah,	Shenandoah,	Miner; hand mashed by a fall of coal.
	20.	Anthony Levetsky,	25	S.		Bear Run,	St. Nicholas,	Miner; head and hand badly cut by coal flying from chute; he did not retreat to a place of safety.
	20.	George Burns,				Ellengowan,	Mapledale,	Miner; leg broken by a fall of coal.
	28.	Victor Sobnoski,	24	S.		Draper,	Gilberton,	Laborer; thigh broken by falling from cage in slope.
	30.	John Cabulis,	28	S.		Bear Ridge,	Mahanoy Plane,	Miner; severely burned by powder while filling a cartridge; a spark from his lamp fell into the powder keg.
Aug.	4.	John Herron,	40	S.		Silverbrook,	Silverbrook,	Miner; collar-bone broken by a fall of coal.
	4.	Patrick Mooney,	26	S.		do.	do.	Miner; leg broken by a fall of coal.
	6.	Anthony Kevolisky,				Shenandoah City,	Shenandoah,	Miner; severely bruised by a fall of coal.
	11.	John Morgan,				Lawrence,	Mahanoy Plane, Aug. 11,	Driver; severely squeezed between cars.
	18.	Thomas Drew,	20	S.		Shenandoah City,	Shenandoah, Aug. 20,	Driver; kicked by a mule on side and breast.
	20.	John Crow,	26	M.	1	Draper,	Gilberton,	Miner; severely cut on face and arms. Went back to a shot too soon and it exploded on him.
	20.	Enock Krotopski,	40	S.		Lawrence,	Mahanoy Plane,	Laborer; head squeezed between car and timber.
	26.	Hudri Futsko,				Boston Run,	St. Nicholas,	Starter; face severely cut by a shot firing on him; carelessness.
	28.	Hugh Garra,	50	M.		Honey Brook No. 4,	Audenried,	Miner; leg broken by a fall of coal.
Sept.	4.	Thomas W. Bevan,	48	M.		Glendon,	Mahanoy City,	Miner; slightly burned on face and hands by an explosion of gas.
	4.	Herbert Wheat,	38	M.	3	do.	do. do.	Laborer; slightly burned on face and hands same time as Bevan.
	10.	Daniel C. Boyle,	43	M.	4	Honey Brook No. 4,	Audenried,	Miner; two ribs broken by a fall of coal.
	10.	George Jones,				Indian Ridge,	Shenandoah,	Miner; head bruised and cut by a fall of coal.
	10.	Thomas Rowley,				North Mahanoy,	Mahanoy City,	Driver; leg injured by being struck by a dumper.
	17.	Thomas Melluskey,				Turkey Run,	Shenandoah,	Miner; leg broken by a fall of coal.
	18.	Joseph Powell,				Gilberton,	Gilberton,	Miner; face and head injured by a premature blast.
	22.	James Dewey,				Bear Ridge,	Mahanoy Plane,	Miner; slightly burned by an explosion of gas. While timbering a chute a fall of coal drove the gas down on their light; gas had not been seen before.
	22.	Thomas J. Murphy,				do.	do. do.	Miner; slightly burned by gas at the same time as Dewey.
Oct.	1.	John Miller,	28	M.	2	Packer No. 2,	Lost Creek,	Miner; leg broken by a fall of coal.
	1.	John Bolinski,	28	M.	3	do.	do.	Miner; shoulders bruised by a fall of coal.

TABLE V—*Continued.*

Date of accident.	NAME OF PERSON INJURED.	Age.	Married.	Number of children.	Name of Colliery.	Location.	Date of investigation.	Nature and Cause of Accident in Brief.
Oct. 28.	Robert Potter.				Knickerbocker.	Yatesville.		Slatepicker; heel cut off by being caught in the scraper wheel.
Nov. 5.	John McShea.	50	S.		Honey Brook No. 4.	Audenried.		Driver boss; leg broken by falling from a car.
6.	Herman Koldloof.	24	M.		North Mahanoy.	Mahanoy City.		Miner; foot cut off by a fall of coal.
11.	John Cullen.				Tunnel Ridge.	do. do.		Miner; arm broken by a fall of coal.
17.	William H. James.				Bear Run.	St. Nicholas.		Miner; leg broken while stripping coal on surface; a piece of earth rolled down on him.
23.	David Tucker.	46	M.	8	Glendon.	Mahanoy City.		Miner; hips and body bruised by a fall of coal.
25.	Joseph Klein.	50	M.		do.	do. do.		Laborer; bruised on body and legs by a fall of coal.
Dec. 4.	Albert Bankis.	29	M.	1	Elmwood.	do. do.		Carloader; two ribs broken by being caught between cars and chute.
5.	John Jones.	49	M.		St. Nicholas.	St. Nicholas.		Miner; seriously injured by a premature blast.
5.	David Art.	37	M.	2	Elmwood.	Mahanoy City.		Starter; severely injured, he went back to a shot too soon and it exploded in his face.
21.	David Morgan.	52	M.	2	West Shenandoah.	Shenandoah.		Inside foreman; arm broken by being kicked by a mule.
31.	Miles Flinn.	36	M.		Oneida.	Nelson City.		Miner; severely injured by falling down a manway.

SEVENTH ANTHRACITE DISTRICT.

(NORTHUMBERLAND, COLUMBIA, SCHUYLKILL AND DAUPHIN COUNTIES.)

OFFICE OF INSPECTOR OF MINES,
ASHLAND, PA., *April 5, 1892.*

HON. THOMAS J. STEWART,

Secretary of Internal Affairs:

SIR: I have the honor of presenting herewith my fourth annual report as Inspector of coal mines for the Seventh anthracite district for the year ending December 31, 1891.

The quantity of coal mined in my district during the year was 5,321,044.58 tons, against 4,428,972.00 for the previous year, thus showing an increase of 892,072.58 tons.

The number of fatal accidents for the year was fifty-six, being an increase of seventeen over the previous year. As in former years fully 60 per cent. of both fatal and non-fatal accidents have been caused by falls of roof and sides, mine cars and machinery.

I am compelled to say that a large number of these accidents, both fatal and non-fatal, could have been averted had proper care been taken on the part of the unfortunates themselves. Some of the accidents occurred through a lack of discipline on the part of the foreman in charge in allowing men to work in places which were not properly timbered.

The accompanying tables give full and complete comparisons with the three previous years.

Respectfully yours,
WILLIAM MCMURTRIE,
Inspector of Mines.

TABLE NO. 1.—*Comparative statement of fatal casualities from various causes which occurred during the years 1889, 1890 and 1891.*

CAUSE OF ACCIDENT.	1889.	1890.	1891.
Explosions of fire damp,	1	1	6
Falls of coal and roof,	25	17	23
Mine cars and machinery,	11	10	13
Falling down slopes and shafts,	3	1	2
Breaking of ropes and chains,			
Explosions of blasting materials,	2	1	3
Suffocated by mine gases,	1		
Kicked by mules,	1	1	
Miscellaneous,	8	8	9
Total,	52	39	56

TABLE NO. 2.—*Showing number of tons of coal mined by each company, number of deaths and number of tons mined per death.*

NAME OF COMPANY.	Tons mined.	Deaths.	Tons mined per death.
Philadelphia and Reading Coal and Iron Co.,	2,523,546.20	23	109,719.40
Mineral Railroad and Mining Company,	553,597.20	9	61,510.80
Summit Branch Railroad Company,	356,544.12	2	178,272.06
Lykens Valley Coal Company,	268,023.12	3	89,341.04
Union Coal Company,	482,919.22	7	68,988.74
L. A. Riley & Co.,	366,823.14	5	73,364.62
Individual collieries,	769,591.58	7	109,941.65
Total,	5,321,044.58	56	95,018.65

TABLE NO. 3.—*Showing the comparison of non-fatal accidents during the years 1889, 1890 and 1891.*

	1889.	1890.	1891.
Falls of coal and roof,	50	59	48
Explosions of fire damp,	25	13	22
Mine cars and machinery,	32	30	45
Explosions of blasting materials,	6	3	17
Kicked by mules,	3	3	
Miscellaneous,	29	13	23
Total,	145	121	155

TABLE No. 4.—*Showing comparison of the quantity of coal shipped, the estimated quantity used and sold at collieries and the total production for the years 1888, 1889, 1890 and 1891.*

	1888.	1889.	1890.	1891.
Quantity of coal shipped,	4,459,960.00	4,051,147.41	4,123,347.00	5,009,505.61
Quantity of coal used at collieries,	250,054.54	302,720.81	305,625.00	311,538.97
Number of tons of coal produced,	4,710,014.54	4,353,868.22	4,428,972.00	5,321,044.58

TABLE No. 5.—*Showing general comparison between the years 1889, 1890 and 1891.*

	1889.	1890.	1891.
Number of persons employed,	17,890.00	18,257.00	18,415.00
Number of tons of coal mined per life lost,	83,758.00	115,357.00	95,018.65
Ratio of employes per life lost,	$344\frac{1}{28}$	$468\frac{5}{33}$	$328\frac{7}{55}$
Number of tons of coal mined per person injured,	30,025.00	36,603.07	25,218.22
Tons of coal mined per employe,	$243\frac{7}{13}$	242.59	288.95

TABLE No. 6.—*Showing the number of persons employed by the several companies and the number of deaths.*

NAME OF COMPANY.	Number of deaths.	Number of employes.
Philadelphia and Reading Coal and Iron Company,	23	8,458
Mineral Railroad and Mining Company,	9	1,823
Summit Branch Railroad Company,	2	1,122
Lykens Valley Coal Company,	3	1,012
Union Coal Company,	7	1,664
L. A. Riley & Co.,	5	1,041
Individual collieries.	7	3,295
Total,	56	18,415

The following named applicants passed successful examinations July 6 and 7, 1891:

Valentine Kline, ... Mt. Carmel.
James Daily, ... Locust Gap.
William Krah, ... Locust Dale.
Henry Ackman, ... Locust Gap.
J. C. Brown, ... Shamokin.
Charles Gallagher, ... Centralia.
John Phillips, ... Williamstown.
Nicholas Brecker, ... Locust Gap.
John E. Davis, ... Ashland.
John Mainey, ... Shamokin,

F. W. Luckinbill, ... Shamokin.
Evan Jenkins, ... Centralia
Robert Ansty, ... Ashland,
Henry Karl, ... Locust Gap.
James Tinley, ... Shamokin.
Henry C. Welker, ... Shamokin,
Thomas Ramage, ... Strong.

CONDITION OF THE COLLIERIES.

The general condition of the collieries in my district is good. During the year several new fans have been erected, new air-ways made and otherwise enlarged so as to ensure a sufficient supply of pure air. I am sorry to say that in some few cases the ventilation is very much neglected. Where this is the case the collieries produce no perceptible fire-damp. I am of the opinion that mine foremen who neglect to furnish ventilation because no fire-damp is detected, labor under a serious mistake and in many cases cost their employer more money because of additional or excessive price for the different kinds of work, owing to the men not being able to work full time. In my visits through the collieries I sometimes meet the men returning home early in the morning. I invariably ask the cause and am often told the air is bad in our working place. We could not work to-day. On making inquiry I find this to be the case even at collieries where every wagon of coal is needed to supply the breaker. I am of the opinion that this is false economy, and shows up the case in a very plain light. Ventilation and good roads for the transportation of the coal I think are very essential to successful mine management. Where both are neglected, the result is very soon apparent in the cost of mining and the limited output.

IMPROVEMENTS IN THE COLLIERIES.

Locust Gap Colliery.—A standard duplex 12″×48″ steam pump has been placed in pump room at second lift. Steam cylinder 36″, water cylinder 12″×48″ stroke, with all necessary column and steam pipe, and all other connections complete. The tender slope has been enlarged to accommodate the pump column and steam pipe in connection with hoisting way for men and material. This slope is now in an excellent condition as to safety and convenience. The fan-way has been enlarged from an area of 40′ to an area of 60′. The whole distance enlarged is 139 yards.

Locust Spring Colliery.—A pair of first-motion hoisting engines, 24″ cylinder by 60″ stroke with brake attached, drum and all necessary connections, has been placed at hoisting slope. A new sheave frame has been built to replace the old worn out one. The tunnel which is being driven from the south to the north dip of Mammoth vein is now in 403 yards. The Orchard vein, south dip, was cut at a distance of 777′ from

Mammoth vein, south dip. The vein is in fair condition. A tunnel is being driven from Mammoth vein, south dip, to Buck mountain vein, south dip; tunnel is in, 133 yards. A jig house 54′×45′ deep by 50′ 9″ high, containing 5 jigs and all the necessary connections, has been erected for the better preparation of the coal. An engine, 14″ cylinder by 24″ stroke, has been erected to supply power for these jigs.

Merriam Colliery.—The tunnel being driven across the Mahanoy basin from Mammoth vein, south dip, to Mammoth vein, north dip, has cut the vein at a distance of 603⅓ yards. An underground slope has been sunk in what is known as Big Run basin. The slope is down a distance of 137⅔ yards and is completed. A steam pipe way 8′ wide by 5½′ high has been driven from the second to the first level, the total distance being 165 yards. A tunnel 18⅔ yards long has been driven from Mammoth vein plane gangway to top split of same vein, cutting the vein in fair condition. A new water line has been laid, connecting with the Bear Gap Water Company's line which gives the colliery an ample supply of pure water for all purposes. In addition to the above, several minor improvements have been made both in and outside at this colliery.

Potts Colliery.—A pair of link motion engines, 18″ cylinder by 36″ stroke, with drum and all connections complete, have been erected to hoist from Primrose slope. A new engine house has been built for same. The Primrose slope is now completed, the total depth being 373 yards. The tunnel connecting the Mammoth and Primrose veins is also completed, the distance being 109 yards. A new fan, 18′ diameter with fan engine and all connections, has been erected for the purpose of ventilating the Primrose vein. All of the above have been enclosed and in addition a new engine house has been built over said fan engine. The breaker has been rebuilt and remodeled and is now fitted throughout with the most improved machinery. The dirt plane has been rebuilt and the machinery repaired, all of which is now in good condition. Two standard 9″×38″ steam pumps have been erected for the purpose of supplying water to jigs located in breaker. One new nest of four boilers, 34″ diameter, 30′ long, has been put in position; also two new nests of two tubular boilers, each 6′ diameter by 18′ long with all necessary connections, have been added to the steam plant.

Bast Colliery.—The rebuilding of the breaker was completed during the year 1891. It has been fitted up with the latest improved machinery and is now one of the best equipped breakers owned by the coal and iron company.

North Ashland Colliery.—The Western slope has been extended 100 yards for a new lift. This makes the total distance 359⅔ yards. The airway has also been extended, and now has an area of 96 square feet. A new frame fan engine house has been erected; also a new fan 15′ diameter with engine and all necessary connections complete. This fan will ventilate the workings in Western slope. One Allison steam pump,

16″ cylinder by 24″ stroke, has been placed in said slope. A new pump house has been made in Mammoth vein 46′ long, 15′ wide by 12′ high and timbered throughout to accomodate said pump. Several minor improvements have been made around the breaker for the purpose of handling the coal coming from the Western slope.

Preston No. 3 Colliery.—The tunnel mentioned in my last report as going south, has now reached the north dip of the Mammoth vein in Mahanoy basin; the vein is in good condition, dip 54° north. The total length of the tunnel from starting point to present face is 1,100′. This will give six gangways on the Mammoth vein, making the colliery one of the best in this section. A new duplex pump has been placed at second level with a steam cylinder 36″ diameter and 48″ stroke and 12″ ram; twelve boilers 40″ diameter, 25′ 3″ long, and twelve boilers 36″ diameter, 22′ 8″ long, with boiler house and all necessary connections have been erected during the year.

Reliance Colliery.—A pair of link motion hoisting engines with drum and all necessary connections have been erected at the Tender slope. A new frame engine house, with corrugated iron roof and sides, has been built over the engines. A new water line has been laid from Bear Gap Water Company's line to the colliery tanks. A water level tunnel 65 yards long has been driven west of breaker, cutting the Skidmore vein 5′ 10″ thick, having a north dip of 25°. A new track has been laid from above tunnel to head of breaker. A new lift has been driven up the pitch from No. 5 to No. 4 level. A standard 9″×38″ steam pump has been placed at water level and connected to old column line and is used for the purpose of pumping water to the jigs located in breaker.

Alaska Shaft.—The Mammoth vein fan has been repaired and a new casing placed over it. The boilers which supplied the steam for fan and tender engine have been removed. The steam is now supplied from the main steam plant located at shaft. A steam line 380′ long and 8″ in diameter has been laid from boilers to pumps at floor of shaft. A new steam line 2,300′ long and 4″ in diameter has been laid from boilers to hoisting engine at bore hole. The engine was formerly underground, but has been replaced by one on the surface. Two bore holes 187′ long by 6″ diameter have been bored to run the hoisting rope through. A tunnel 363′ long was driven from the southwest gangway of Mammoth vein south to the Skidmore, cutting the vein 8′ 3″ thick, 7′ 3″ of which is good coal. A new self-acting plane 544′ long was driven in the Skidmore vein. This plane will be worked in two lifts. The drum room and the grading are now completed.

Buck Ridge Colliery.—A new lift of 110 yards has been completed during the year on the No. 8 vein. A tunnel 15 yards long has been driven north to No. 9 vein. A gangway has been driven east on No. 9 vein for a distance of 236′ to a point directly under No. 9 vein slope. A hole is now being driven up to connect with the bottom of No. 9 vein

slope. This opening will be enlarged and timbered, and connected to the slope on No. 9 vein, and will make the seventh lift. The Allison and Bannon pump which was located in the No. 6 lift has been repaired and erected near the slope on the No. 8 vein. A steam and column line has been put in, in connection with said pump, all of which is now completed. A Cameron steam pump, 20″ cylinder by 36″ stroke has been erected in the water level near the No. 8 vein slope, and is used to pump water to the slush screen in breaker. A tunnel has been driven north 200 yards for the purpose of cutting the No. 11 vein. The vein has not been reached as yet. In addition to the above several minor improvements have been made around the breaker.

Henry Clay Colliery.—Twenty-four additional boilers, 34″ diameter by 43½ long have been put in place during the year with boiler house and all necessary connections complete. Four cedar tanks each having a capacity of 20,000 gallons have been erected to supply the above boilers. Three small feed pumps have been erected to be used in connection with above boilers. Two standard fuel conveyors 325′ long have been erected to convey fuel to above steam plant. Two standard steam pumps, 9″×38″ with 18″ cylinder, have been erected at jig house with all necessary connections. A frame pump house has been erected over above pumps. Two standard 9″×38″ Cameron steam pumps, 20″ cylinders, and two standard Cameron steam pumps, 18″ cylinder, have been erected at foot of No. 11 vein slope with all necessary connections complete. A pump room 45′ long, 14′ wide and 8′ high has been erected on top rock to accommodate these pumps. A bore hole 72′ long was drilled from face of No. 11 vein east gangway, to the face of the Garfield No. 11 vein west gangway to tap the water of the Garfield colliery in order to use it at jig house.

Big Mountain Colliery.—The tunnel mentioned in last report as being driven in No. 1 slope south, has gone a distance of 307⅔ yards at which point the No. 9 vein was cut having a north dip of 75°. A self-acting plane has been completed in No. 2 slope, and is now in operation. A new self-acting plane in first lift of No. 9 vein gangway was driven in basin. A tunnel is now being driven from the head of the same plane to No. 8 vein. A tunnel is also being driven from east No. 9 vein gangway on lower level to No. 8 vein. A tunnel has been driven in straight vein south to No. 9 vein. A tunnel has been driven in No. 11 vein water level gangway south to No. 12 vein, the distance being 103′. Four standard steam boilers, 34″ in diameter by 30′ long with all connections complete, have been added to the steam plant.

Sterling Colliery.—The entire pumping plant has been changed and arranged as follows: Two standard 9″×38″ steam pumps with steam cylinders 38″ in diameter have been placed at No. 2 lift, pumping from that point to surface. A pump room has been built to accommodate above pumps. At the third lift one standard 9″×38″ steam pump

has been placed, and pumps from that point to surface. A new pump room has been built for same. One 9″×38″ steam pump 20″ cylinder, and one 9″×38″ steam pump 18″ cylinder, have been placed at the fourth lift and pump the water from that point to the second lift. A new pump room has been built to accommodate above pumps. A self-acting plane 163 yards long has been made in west No. 9 vein and is now in operation. A tunnel 40′ long has been driven at foot of said plane for the purpose of charging the wagon. A tunnel 64′ feet in length has been driven through the saddle from No. 9 to No. 9 vein.

Burnside Colliery.—Several new screens have been placed in the breaker for the better preparation of the coal. One 9″×38″ steam pump has been placed in the breaker and is used to pump the water for washing the coal. Several other improvements have been made at this colliery.

Bear Valley Colliery.—A standard suction fan 18′ in diameter with engine and all necessary connections complete, has been erected during the year. Several other minor improvements have been made in and around the breaker.

Midvalley Colliery No. 1.—No.2, or main slope, was completed with bottom of slope made in rock, loaded and empty car tracks graded to and from bottom, so that loaded cars run from turn-out to foot of slope and empty cars run on to turn-out away from slope. A pump house has been made in the bottom rock of Holmes vein and is fireproof so far as it is practicable to make it. As little timber as possible was used, and mine rails are used to lag the top and side where necessary. A new pattern Jeanesville pump 28″×12″×36″ was placed in this pump room and has proved very satisfactory. A 12″ column was laid out from pump to surface through No. 1 slope, as was also a line of 5″ steam pipe which was covered its entire length from pump to boilers with wooden boxes filled with mineral wool. A large sump gangway was opened which holds over 200,000 gallons of water. There is also on the ground ready for any emergency a new and improved pattern of Worthington mine pump, duplex plunger, size 10″×12″×15″ guaranteed to work in any position and under any condition. There was a new main air-way driven on Holmes vein amply timbered from top to bottom, having an area of 130 square feet. A new fan 18′ in diameter was placed at the head of this air-way which is giving the most satisfactory results. Two tunnels were driven from the first lift of slope Holmes vein, south to the Mammoth vein, which proved very regular and in most excellent condition. A second outlet was driven from Mammoth vein to the water-level gangway and carefully timbered and stepped, and is in first-class condition. A traveling way was also put out on the Holmes vein east of the main, or No. 3 slope, and has also been timbered from top to bottom. The veins worked are Mammoth and Holmes. The coal in both veins is first-class in every way. The colliery is entirely dependent on steam

furnished from Wilcox & Babcock boilers, the capacity being 500-horse power. Those boilers give entire satisfaction. The outside improvements are all first-class in every particular, they are substantially built, well-planned and nicely laid out. The breaker is a double one, and contains all the latest improvements in the way of machinery to clean and prepare 1,800 tons of coal per day without any trouble. The coal is washed from the top of the breaker until it is loaded out into the railroad cars. All sizes are made from lumps to wash dirt or No. 2 culm. Three tracks are laid up the plane to breaker, two from the main, or No. 2 slope, and one for the purpose of taking the water level tunnel coal. A new water level tunnel was opened 2,000′ east of the breaker; 1,000′ of railroad track was laid, and a short tunnel driven to No. 1 water level to bring the coal from No. 2 water level out through No. 1 water level gangway to the foot of breaker plane. Both these water level tunnels are opened on the Mammoth vein and will give the colliery a very large quantity of coal above water level. The plan is to drive a tunnel from east No. 2 water level back to Buck Mountain vein which will give a water level gangway on Buck Mountain vein the entire length of the lease if desired. Blacksmith and carpenter shops and supply house, boiler house, tanks, fan house, engine house are all built and painted of uniform color a dark red. The lines of steam pipe are all boxed and filled in with mineral wool and hung up in a regular and systematic way and painted throughout their entire length. No money has been spared to make the plant first-class in every way, and in fact to make it one of the model colleries of this region. The breaker was put in operation February 16, 1891, and has been running regularly ever since. The output for year is nearly 100,000 tons and if nothing unforeseen happens, the year 1892 ought to double this. In addition to their mining plant, the Midvalley Coal Company have built a town of their own for their employes, naming it Wilburton. The town is built on top of the mountain about one-fourth mile east of the breaker and overlooks it and the valley below. It is nicely and regularly laid out with streets and alleys, and each block of houses is surrounded with a large plot of ground, giving opportunities for gardens and preventing crowding. The houses are first-class in every particular and painted inside and out, plastered and wainscoted, with neat porches, cellars under all houses, properly drained, with out-houses, coal houses and a small barn combined. It is certainly the model town of the anthracite coal region. There are several classes of houses, large, medium and small, to suit different sized families. The streets of the town are cleaned up and graded, water pipes run through the town supplying good, pure water to all, right at their doors. This water is pumped by the company from their water supply dams in the valley below. There is already a school house with two school rooms, graded and ungraded schools. The headquarters of the coal company are in large and comfortable rooms in the company building in town. This is a busy, pros-

perous, industrious little town of over 600 people where little over a year ago was a barren wilderness. The company is composed of the following gentlemen; E. B. Leisenring, Mauch Chunk, president; G. B. Myers, Bethlehem, secretary and treasurer; Frank G. Clemens, Mt. Carmel, superintendent and engineer.

Patterson Colliery.—This colliery commenced mining and shipping coal from their new breaker during the latter part of the year, but owing to the limited openings inside it did not make a large shipment. This colliery has changed owners during the year and is at present managed by Mr. Henry Vincent. A railroad five miles long was built during the year, connecting with the Philadelphia and Reading railroad near Mount Carmel. The inside workings consist of a slope 1,300′ long on Buck Mountain vein. The average dip being eleven degrees. Several new gangways have been opened east and west of the slope, and in a short time this colliery will be brought up to its full capacity. A new fan has been erected to ventilate the workings on Buck Mountain vein. The drifts which were being driven on the underlying veins have been stopped temporarily owing to the change in the management.

Short Mountain Colliery.—Two Babcock & Wilcox boilers have been erected for the purpose of generating steam for two compound duplex pumps which are to be placed at foot of No. 4 slope. The column and steam pipes, and all other connections, are now on the ground. A pump room 45′×22′×8′ has been built to accommodate above pumps.

Williamstown Colliery.—One Babcock & Wilcox boiler was erected at what is known as the Greenfield pumping station. This boiler will generate steam for the pumps located at this station. The tapping of the water from the Big Lick workings on the lower level has been completed. The water was tapped in three sections and has been done very successfully. Six Bradley jigs have been placed in the breaker for the better preparation of the coal. A washery has been built at foot of culm bank with screens and elevators and a plane 380′ long to hoist the coal up to the breaker. The power to run the screen, etc., and hoist the coal up the plane is furnished by water which is run on to what is known as the Pelton water wheel. The pressure being 85 pounds to the square inch. It does its work very satisfactorily. The Bear Valley shaft was completed during the year; the total distance is 850′ to sump bottom. Gangways are being opened east and west of shaft and turnouts being driven to get ready to mine and hoist coal. Two Cameron steam pumps 18″×36″ have been placed in shaft. One is located 410′ from surface and one at foot of shaft.

Mount Carmel Colliery.—A suction fan, 16′ diameter, has been erected at this colliery for the purpose of ventilating the No. 5 slope workings. The workings in this slope are all on the Mammoth and Skidmore veins. The coal is brought from the No. 5 slope over the surface to the breaker

by a small mine locomotive. A new plane has been erected for the purpose of hoisting this coal on to the head of breaker.

Enterprise Colliery.—A slope has been sunk on the underlying vein for a distance of 100 yards. The coal at the foot of this slope is of good quality, the vein being eleven feet thick. A single engine has been erected to hoist from above slope. The track has been graded and laid from head of slope to breaker. A new steam pump has been placed in No. 3 slope, so that should the quantity of water increase, the facilities will be at hand to pump it out. The engine and boiler houses at No. 3 slope were destroyed by fire on December 9, 1891, thereby throwing the colliery idle until December 21, when the damage was repaired and the colliery commenced working and shipping coal.

Colbert Colliery.—The breaker of this colliery was destroyed by fire in the early part of the year 1891. As soon as the *débris* was cleared away, work was commenced on the new breaker, which was completed in the month of September. The breaker is a single structure having a capacity of 350 to 400 tons a day. An air shaft 106 feet long has been sunk through the measures overlying the No. 4 vein down to the top of the anti-clinal for the purpose of ventilating the No. 4 vein workings.

Centralia Colliery.—A tunnel has been driven north from Buck Mountain to Mammoth vein north dip opposite to Big Mine Run drainage tunnel. A tunnel was also driven north to connect the Buck Mountain vein south dip with the Mammoth vein south dip. The workings in the Mammoth vein being below the levels of above mentioned tunnels allow the water to flow from all the workings above, into Mammoth vein, thence out through drainage tunnel to surface. Gangways are being opened on Mammoth vein through the old workings. A new fan way has been driven from the lower lift to surface, the total distance being 1,100 feet.

Logan Colliery.—A new standard rope haulage with engine and all connections complete, including 6,000 feet of $\frac{7}{8}$-inch steel wire rope has been placed in No. 3 slope, Mammoth vein workings, and is in successful operation. This makes the third plant of this kind at this colliery, all of which work satisfactorily. Two new gangways have been driven from the bottom of No. 3 slope eastward on the north and south dips into the old workings of the Centralia and Hazel Dell collieries, forming an outlet from the Logan colliery into the old workings of the above mentioned collieries. This will allow the water generated in the Logan colliery to find its way to Big Mine Run drainage tunnel, thence through said tunnel to surface. A new lift has been sunk on the No. 5 slope Buck Mountain vein to the depth of 280 feet. This makes the fourth lift on this slope. A bore hole 8 inches in diameter has been drilled from the surface to Buck Mountain vein, the distance being 389 feet. The object of this hole is to have a rope from the No. 1 slope on the Mammoth vein to connect with the rope on the No. 7 slope, which is

now being sunk 200 feet. By these connections the coal mined in No. 7 slope can be hoisted by the engine placed at the head of No. 1 slope on the surface. In addition to the above, several other improvements have been made around the breaker.

ACCIDENTS.

I give in detail the causes of several of the accidents occurring in my district during the year of 1891. By a careful examination into the causes which led to all the accidents mentioned, it will be readily seen that all of them might have been averted if proper care had been exercised. Hershock was killed, not through any fault of his own, still his death would not have occurred had the hitching plate of the dumper not been tampered with by unknown parties. All of the others mentioned were caused, no doubt, by over confidence on the part of the victims themselves. I do not wish to be understood as saying that men will rush into danger, knowing it to exist, but I do say that care which should be taken in looking for unsafe top coal and slate and unsafe sides, tampering with mine cars and machinery is, in many cases, not exercised. And what is true of the above mentioned causes of accidents is also true as to accidents from fire-damp. And I am safe in saying that had the proper care been taken by all parties interested, not one of the fatal accidents occurring through fire-damp during the year would have taken place. In conclusion, I hope that all parties interested will co-operate in seeing that the existing dangers be carefully looked after and, wherever found, removed or prevented as far as possible. By so doing I am confident that many of our accidents, both fatal and non-fatal, will be averted.

Michael Reddy, a miner, age thirty-eight years, was fatally burned by an explosion of fire damp in breast No. 2 east basin gangway, Centralia colliery, January 2, 1891. His death resulting a short time after the accident.

Benjamin Bray, his partner, was seriously burned by the same explosion. At the point where the accident occurred, the breast in which they worked was in very free coal, in fact, so much so that one-half of the breast from the east pillar kept running ahead almost all the time. The deceased and his partner could not keep it timbered as far up as the west side of the breast. From the time the breast started it had been examined every morning by a fire-boss, and in all the examinations he did not discover any fire-damp. The fire-boss made his usual examination on the morning on which the accident happened. On that occasion he did not discover any fire-damp. He reported the place clear to the deceased and his partner, but told them that the breast was working and that some coal was falling on the east side of the breast. Deceased and his partner were provided with a safety lamp in addition to the naked lamp with which they worked. They carried the safety lamp to the face of breast, but owing, I suppose, to no fire-damp having been

found in the breast, the safety lamp was not brought into general use. And on the day on which the accident happened, when deceased and his partner reached the face of breast going up the west or Cass manway no fire-damp was found. Bray got into the breast and crossed to the east or down Cass manway to see if the coal which fell during the night had blocked the head of the manway. After making his examination he was returning to where deceased was sitting at head of up Cass manway. While he was crossing the breast a fall of coal took place which brought the fire-damp down on the naked lamp which he had in his hat; the explosion followed, burning Bray severely. The deceased was also burned, and in addition I am inclined to believe he fell down the manway, as he was found at the platform at gangway. From the evidence given at the coroner's inquest by the fire-boss the fire-damp must have accumulated after he made his examination. It is possible for such to be the case owing to the breast being continually working. The ventilating current was up to the average when I made my investigation.

John Hershock, a laborer, age thirty-five years, was killed at Burnside colliery, January 12, 1891, by being struck by a runaway dumper at foot of dirt plane. He was engaged cleaning the road when the accident happened, the loaded dumper was standing at foot of plane ready to be hoisted, Hershock was throwing the dirt into this dumper intending of course to move to a place of safety while the dumper would be hoisted up the plane. The men on head of plane pushed the empty dumper in and hooked the rope on to it, when it got over the apex the hook which the rope was on, pulled out allowing the dumper to run away down the plane. Hershock continued working and was struck by the dumper and instantly killed. The cause of this accident was the removing of the pin which held the hitching hook in place, it was the sense of the coroner's jury that this malicious act which cost a human life was done by some boys thinking by so doing that the damage done by the run away dumper would throw the colliery idle and give them an opportunity to play. The jury or myself were unable to find out who the boys were.

John Welsh, miner, age forty-five years, was killed at Bast colliery, January 14, 1891; when the accident happened he was engaged in driving what is known as the cross hole to the monkey in the east Mammoth vein gangway, he had drilled a hole and in charging it or putting fire to it, it is not known which, the shot exploded blowing his body out on the gangway, where it was found a short time after, life being extinct.

Thomas McGovern, a driver, age twenty-seven years, was killed at Centralia colliery, by being crushed between mine wagon and chute, January 21, 1891; when the accident happened he was riding on the front end of the first wagon of trip; instead of standing on the side of the wagon which is known as the low side, he chose to ride on what is known as the upper or high side. The chutes all projected over the wagons, the deceased must have forgotten that he was approaching the

chute until too late to escape. He was caught between the chute and end of wagon and crushed to death, his body fell under the wagons and was dragged for a distance of one hundred feet or more. Had he taken the precaution of riding on the low side of wagon this accident would in all likelihood have been averted.

Ira W. Shade, a laborer, age eighteen years, was killed by a fall of slate at Williamstown colliery, January 26, 1891; he was employed as a laborer in breast 22, Lykens Valley vein, east gangway, tunnel level. He had just gone to face of breast in the morning, and crossed to the west manway to get some tools which he needed to commence work with, as he reached the west side of breast the fall took place, striking and killing him as above stated. The top slate in this vein is very free, it being only a short distance under what is called the Big Lykens Valley vein; in this case it is very evident that the miner neglected his duty, he should have gone to face of breast and examined it, and I feel confident had he done so, in all probability this accident would have been averted. When a miner employs a laborer to work with him it is his plain duty to see that the working place is safe for the laborer to work in, however, many of them leave the laborer to run the risk of working in an unsafe place so as to save work for themselves, and in this way many of the so-called accidents are caused.

James Quinn, a driver, age twenty years, was killed at Mount Carmel colliery, February 12, 1891; the deceased had just brought two loaded wagons to foot of slope, the bottom man in hitching them on, failed to get the pin through the both sides of the clevis; when the weight of the load got on the rope, the large link which the clevis pin should have been put through, pulled out, allowing the wagon to run down the slope; the deceased was crossing the bottom which he should not have done while wagons were being hoisted, he attempted to get out of the way but failed, one of the wagons jumped the track and caught his head between it and the gangway leg, fracturing his skull, from the effects of which he died instantly.

Alexander Maduskie, a miner, age thirty-three years, was killed by being run over by an empty trip of wagons on the hoisting slope at Stirling colliery, February 13, 1891. He in company with several other men were on the empty trip ready to be hoisted up, the tongs which guide the wagons from one track to the other failed to work on this occasion. One of the bottom men went up the slope to ascertain the cause of the tongs not working, he became confused as to which track he could fix the tongs for, and called to the men standing on the wagon asking which side he should fix them for, the men failed to understand him, he then fixed the tongs for the west track, this proved to be wrong and when the wagons came to the tongs they were thrown from the track. Maduskie was thrown under the wagons and instantly killed. Had the bottom man taken the precaution to see for himself which road he should turn the tongs for, this accident would not have happened.

John Rader, a miner, age thirty-five years, was killed by the premature explosion of a shot in the tunnel in which he was driving, at Cameron colliery, March 5, 1891. He had tamped and prepared a shot ready to fire, he lit the squib and retreated to a place of safety; for some reason not known the shot did not go off, after waiting a short time he went to see the cause of the shot missing fire, and while making the examination the shot went off killing him instantly.

Benjamin Rawling, an engineer, age forty-nine years, was killed by a fall of rock at Stirling colliery, on March 10, 1891. On the night on which the accident occurred the deceased was employed running a steam pump on the third level. A party of men were employed timbering one of the west gangways, the deceased knowing the men were working close by, went in the gangway to see them, he stood a short distance outside of the place where they were preparing to stand the timber. A shot had been fired to knock down some loose slate to make room for timber, it was thought that all the loose rock had been taken down, this unfortunately was not the case, for immediately over the place where the deceased stood, a large piece of loose slate was left up, this fell on him injuring him so seriously that he died in a few hours after the accident.

Isaac Paul, a laborer, age twenty-three years, was killed by falling down No. 3 slope at Cameron colliery, July 10, 1891. He in company with several others were waiting to be hoisted up the slope, the engineer did not respond as soon as the bell was rung, and Paul becoming impatient attempted to walk up the slope which has a pitch of 78 degrees at one point; when he reached the head of this heavy pitch he lost his balance and fell back to the bottom, a distance of about 150 feet, when picked up, life was extinct. Had he waited a few minutes he would have been hoisted up, or had he walked out to the Skidmore slope, he could have walked up with ease, as it is stepped throughout, and makes quite a safe traveling way.

TABLE I—*Showing Location of Collieries in the Seventh Anthracite District.*

NAME OF COLLIERY.	Name of Operator.	Location—County.	Name of Superintendent.	P. O. Address.
Alaska	Philadelphia and Reading Coal and Iron Company	Mt. Carmel township, Northumberland county	John Veith	Pottsville.
Reliance	do. do.	do. do.	do.	do.
North Ashland	do. do.	Conyngham township, Columbia county	do.	do.
Bast	do. do.	Big Mine Run, Schuylkill county	do.	do.
Tunnel	do. do.	Ashland, Schuylkill county	do.	do.
Keystone	do. do.	Locustdale, Schuylkill county	do.	do.
Potts	do. do.	do.	do.	do.
Merriam	Mt. Carmel and Reading Coal and Iron Company	Mt. Carmel township, Northumberland county	do.	do.
Monitor	do. do.	do. do.	do.	do.
Locust Gap	do. do.	do. do.	do.	do.
Locust Spring	do. do.	do. do.	do	do.
Buck Ridge	do. do.	Coal township, Northumberland county	do.	do.
Big Mountain	do. do.	do. do	do.	do.
Peerless	do. do.	do. do.	do.	do.
Henry Clay	do. do.	do. do.	do.	do.
Sterling	do. do.	do. do.	do.	do.
Burnside	do. do.	do. do.	do.	do.
Bear Valley	do. do.	do. do.	do.	do.
North Franklin	do. do.	Treverton, Northumberland county	do.	do.
Preston No. 2	do. do.	Preston Hill, Schuylkill county	do.	do.
Preston No. 3	do. do.	Girardville, Schuylkill county	do.	do.
Locust Run	do. do.	Conyngham township, Columbia county	do.	do.
Midvalley	Midvalley Coal Company	do. do.	F. G. Clemens, supt. and engr.	Mt. Carmel.
Pennsylvania	Union Coal Company	Coal township, Northumberland county	Holden Chester	Shamokin.
Hickory Swamp	do.	do. do.	do.	do.
Hickory Ridge	do.	do. do.	do.	do.
Excelsior	Excelsior Coal Company	do. do.	A. Robertson	Pottsville.
Corbin	do.	do. do.	do.	do.
Cameron	Mineral Railroad and Mining Company	Shamokin, Northumberland county	Morris Williams	Shamokin.
Luke Fidler	do. do.	do. do.	do.	do.
Logan	Lewis A. Riley & Co.	Centralia, Columbia county	Edward Reese	Centralia.
Centralia	do.	do.	do.	do.
Williamstown	Summit Branch Railroad Company	Williamstown, Dauphin county	T. M. Williams	Lykens.
Short Mountain	do.	Wiconisco, Dauphin county	do.	do.
Nellson	J. Langdon & Co.	Shamokin, Northumberland county	H. S. Gay	Shamokin.
Enterprise	Enterprise Coal Company	Coal township, Northumberland county	D. H. Hughes	Excelsior.
Mt. Carmel	Thomas M. Righter & Co.	Mt. Carmel, Northumberland county	Thomas M. Righter	Mt. Carmel.
Morris Ridge	May, Troutman & Co.	Conyngham township, Columbia county	James May	Shamokin.
Bellmore	D. Bickel & Co.	do. do.	Tobias Bickel	Mt. Carmel.
Continental	L. V. Coal Company	do. do.	D. P. Brown	Lost Creek.
Colbert	Smith & Keiser	Coal township, Northumberland county	William Smith	Shamokin.
Ferndale	Phillips, Nagle & Co.	Mt. Carmel, Northumberland county	E. J. Phillip	Mt. Carmel.
Patterson	Patterson Anthracite Mining Company	Mt. Carmel township, Northumberland county	H. Vincent	Natalie.

TABLE II—*Gives the total number of tons of coal mined in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Seventh Anthracite District for the year ending December 31, 1891.*

NAME OF COLLIERIES.	Location.	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs of powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Electric motors.	Pounds of dynamite.
Alaska	Northumberland county	239,520.06	225,963.06	199.30	730	2	. .	7,220	36	76	. . .	. . .	3,154
Reliance	do. do.	169,306.05	159,723.05	225.45	488	3	3	5,291	24	37	. . .	. . .	563
Merriam	do. do.	141,691.12	133,671.11	225.40	490	2	2	3,399	39	70	. . .	. . .	6,210
Monitor	do. do.	68,714	64,825	169.95	314	2	1	844	16	35	. . .	. . .	1,318
Locust Gap	do. do.	235,404.13	222,079.13	247 10	576	1	7	3,476	25	40	1	. . .	4,390
Locust Spring	do. do.	206,962.05	195,247.05	242.30	477	3	4	6,594	28	70	1	. . .	2,967
Buck Ridge	do. do.	47,137.17	44,462.17	192.45	335	1	4	1,193	25	20	. . .	. . .	3,555
Big Mountain	do. do.				613	1	10	6,649	24	. . .	1	. . .	8,823
Peerless	do. do.	470,091.02	443,695.02	243.45	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Henry Clay	do. do.				684	1	2	2,588	42	199	2	. . .	482
Sterling	do. do.				292	2	3	2,552	20	. . .	. . .	. . .	2,875
Burnside	do. do.	211,808.03	199,819.03	240.25	627	5	7	4,990	16	63	. . .	. . .	3,470
Bear Valley	do. do.	118,795.01	112,071.01	213.70	404	. . .	2	2,563	34	45	1	. . .	4,428
North Franklin	do. do.	140,418.01	132,470.01	225.65	348	. . .	2	2,117	18	35	1	. . .	3,359
North Ashland	Columbia county	146,729.12	138,424.12	195.70	577	. . .	4	3,441	34	49	1	. . .	3,854
Keystone	do. do.	76,561.17	72,263.17	211.50	223	. . .	. . .	83	16	25	. . .	. . .	3,524
Potts	do. do.	16,516	15,573.17	120.10	301	. . .	. . .	695	27	16	. . .	. . .	2,116
Bast	Schuylkill county	164,042.11	154,757.11	237.10	580	2	4	1,722	46	53	. . .	. . .	11,050
Tunnel	do. do.	34,842.15	32,870.15	66.55	53	. . .	1	63	20	4	. . .	. . .	1,100
Preston No. 3	do. do.	35,009	33,027	152.40	321	. . .	4	413	46	22	1	. . .	15,673
Preston No. 2	do. do.				13	. . .	. . .	. . .	14	5	. . .	. . .	. . .
Locust Run	do. do.				9	. . .	. . .	. . .	15	2	. . .	. . .	. . .
Pennsylvania	Northumberland county	292,840.01	282,640.01	287.75	846	6	24	9,488	41	105	2	. . .	. . .
Hickory Ridge	do. do.	120,642.18	111,862.18	195	475	1	6	3,331	24	41	1	. . .	. . .
Hickory Swamp	do. do.	69,437.03	62,637.03	164.25	343	. . .	5	2,074	15	37	. . .	. . .	. . .
Cameron	do. do.	327,890.07	297,954.07	258.75	1,024	6	7	11,630	40	103	2	. . .	15,470
Luke Fidler	do. do.	225,707.13	203,987.13	251.75	799	3	1	5,263	20	75	1	. . .	4,843
Excelsior	do. do.	178,844.17	178,844.17	287	433	1	1	5,000	26	55	. . .	. . .	. . .

TABLE II—*Continued.*

NAME OF COLLIERIES.	Location.	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs of powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Electric motors.	Pounds of dynamite.
Corbin	Northumberland county	62,919.02	62,919.02	285	161	. . .	2	3,600	7	7	. . .	. . .	. . .
Enterprise	do. do.	71,599	71,599	178	309	. . .	1	731	31	23	2	. . .	. . .
Neilson	do. do.	143,890.06	141,152.06	269.75	659	3	5	4,810	19	28	. . .	. . .	. . .
Mt. Carmel	do. do.	86,054.18	81,957.01	257	318	2	2	2,831	33	30	2	. . .	. . .
Colbert	do. do.	15,561.06	15,070.06	139.75	88	. . .	. . .	623	3	13	. . .	. . .	. . .
Patterson	do. do.	7,000	7,000	25	289	. . .	. . .	600	9	13	. . .	. . .	. . .
Bellmore	do. do.	9,847.06	9,725.06	19.60	252	. . .	. . .	750	16	26	. . .	. . .	. . .
Midvalley	Wilberton, Columbia county	98,524	92,214.11	247	402	. . .	1	2,538	4	20	. . .	. . .	. . .
Logan	Centralia, Columbia county	168,009	141,382.03	195.70	495	2	7	5,610	32	55	1	. . .	800
Centralia	do. do.	198,814.14	170,075.14	199.70	545	3	2	4,929	28	59	1	. . .	2,500
Morris Ridge	do. do.	56,203	56,203	194.80	198	1	1	1,842	16	17	. . .	. . .	. . .
Williamstown	Williamstown, Dauphin county	356,544.12	350,023.12	303.75	1,112	2	17	11,406	84	141	4	. . .	. . .
Short Mountain	Wiconisco, Dauphin county	268,023.22	259,491.02	302.85	1,013	3	10	3,518	77	133	3	1	. . .
Big Mine Run*	Big Mine Run, Schuylkill county	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Continental*	Centralia, Columbia county	. . .	. . .	. . .	43	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Ferndale	Mt. Carmel, Northumberland county	39,150.03	51,850.03	198.90	143	. . .	1	2,020	8	15	. . .	. . .	. . .
Total		5,321,044.58	5,009,505.61	194.16	18,415	56	153	138,487	1,098	1,846	28	1	96,524

* Not working.

TABLE III.—*Showing the number of each class of Employes at each Colliery in the Seventh Anthracite District during the year 1891.*

NAMES OF COLLIERIES.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand total inside and outside.
	Inside foremen.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Alaska	3	249	44	81	36	17	430	1	15	13	197	73	1	300	730
Reliance	3	175	37	36	20	9	280	1	6	10	133	56	2	208	488
North Ashland	4	138	28	133	15	11	329	1	20	18	130	78	1	248	577
Bast	8	119	41	119	19	21	327	1	6	19	143	82	2	253	580
Tunnel	1	. . . .	18	. . . .	. . . .	. . . .	19	1	13	6	13	13	1	34	53
Keystone	5	18	. . .	48	5	4	80	1	4	10	70	57	1	143	233
Potts	5	60	17	33	3	2	120	1	66	15	36	65	1	184	304
Merriam	6	163	32	103	23	7	334	1	7	18	66	63	1	156	490
Monitor	3	94	29	70	10	3	209	1	3	5	55	40	1	105	314
Locust Gap	6	193	39	88	19	9	354	1	24	17	86	92	2	222	576
Locust Spring	5	159	29	68	23	4	288	2	6	11	101	67	2	189	477
Buck Ridge	3	112	27	37	7	11	197	1	29	14	57	36	1	138	335
Big Mountain	6	379	76	75	61	16	613	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	613
Peerless	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
Henry Clay	4	97	24	65	18	4	212	4	17	28	217	201	5	472	684
Sterling	4	135	28	60	15	4	246	1	4	7	. . .	34	. . . .	46	292
Burnside	4	225	41	74	24	9	377	. .	18	8	123	99	1	250	627
Bear Valley	3	133	36	60	16	5	253	1	4	12	76	57	1	151	404
North Franklin	3	67	22	38	15	1	146	1	12	10	74	103	2	202	348
Preston No. 2	. . . .	. . . .	. . . .	4	. . . .	. . . .	4	. . . .	. . . .	5	. . . .	4	. . . .	9	13
Preston No. 3	3	69	39	49	5	6	171	1	7	17	68	56	1	150	321
Locust Run	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	1	. . . .	6	. . . .	2	. . . .	9	9
Pennsylvania	1	375	60	138	40	16	630	1	6	17	90	100	2	216	846
Hickory Ridge	1	172	20	86	20	10	309	1	4	9	90	60	2	166	475
Hickory Swamp	1	120	15	42	20	7	205	1	5	11	68	52	1	138	343
Cameron	5	304	63	280	42	21	715	1	20	22	133	130	3	309	1,024
Luke Fidler	4	194	72	266	37	20	593	1	11	14	95	82	3	206	799
Excelsior	2	161	72	37	23	3	298	1	6	11	70	44	3	135	433
Corbin	1	50	37	5	7	. . . .	100	1	1	3	34	20	2	61	161
Enterprise	2	90	46	31	17	3	189	1	9	14	55	38	3	120	309
Mt. Carmel	1	121	12	31	20	3	188	2	4	14	60	46	4	130	318

TABLE III—*Continued.*

NAMES OF COLLIERIES	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand total inside and outside.
	Inside foreman.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Midvalley	1	124	37	51	11	4	228	1	6	7	35	120	5	174	402
Logan	2	140	30	84	13	6	275	1	10	25	125	55	4	220	495
Centralia	2	125	50	105	20	13	315	1	11	20	125	70	4	231	546
Morris Ridge	1	65	25	26	7	2	126	1	2	10	35	22	2	72	198
Williamstown	5	360	220	116	80	26	807	2	20	39	111	140	3	315	1,122
Short Mountain	5	246	186	147	71	24	679	2	18	29	170	112	3	333	1,012
Bellmore	1	70	19	30	12	11	143	1	7	17	37	42	4	109	252
Patterson	1	43	51	29	9	4	137	1	13	6	85	43	4	152	289
Neilson	4	291	56	137	26	....	514	1	14	15	50	61	4	145	659
Colbert	1	44	4	4	4	....	57	1	2	1	18	9	....	31	88
Ferndale	1	40	26	8	8	....	83	1	3	8	26	20	2	60	143
Continental	1	10	6	8	....	....	25	....	3	7	....	8	....	18	43
Total	122	5,730	1,714	2,902	821	316	11,605	46	436	548	3,144	2,552	84	6,810	18,415

TABLE IV.—*List of Fatal Accidents occurring in and about the Mines of the Seventh Anthracite District for the year ending December 31, 1891.*

Date of accident.	NAME OF PERSON INJURED.	Occupation.	Age.	Married or single.	Number of orphans.	Name of Colliery.	Location—County.	Nature and Cause of Accident in Brief.
Jan. 3.	Michael Reddy.	Miner.	38	M.	5	Centralia.	Columbia,	Killed by an explosion of fire damp. Date of inspection, January 4.
12.	John Hershock.	Laborer.	38	M.	5	Burnside.	Northumberland,	Killed by being struck by dirt dumper at foot of plane.
14.	Math. Shepulski.	do.	30	S.		Luke Fidler,	do.	Fatally injured by an explosion of fire-damp January 2; died January 14.
15.	John Welsh.	Miner.	45	M.	8	Bast.	Schuylkill.	Killed by premature explosion of gas.
21.	Thomas McGovern.	Driver.	27	S.		Centralia.	Columbia.	Killed by being run over by mine wagons.
26.	Ira W. Shade.	Laborer.	18	S.		Short Mountain.	Dauphin.	Killed by a fall of slate.
31.	John Hanlon.	Driver.	19	S.		Mt. Carmel.	Northumberland,	Killed by a fall of rock.
Feb. 3.	M. C. Shoskie.	Miner.	28	S.		Luke Fidler,	do.	Fatally injured January 2 by an explosion of gas; died February 5.
12.	James Quinn.	Driver.	21	S.		Mt. Carmel.	do.	Killed by being crushed between mine wagons and timber.
13.	Albert Maduski.	Miner.	33	M.	3	Sterling.	do.	Killed by being run over by mine wagons on hoisting slope.
17.	George Heik.	Driver.	21	S.		Pennsylvania.	do.	Killed by being run over by mine wagons.
24.	Peter Martin.	Miner.	35	M.	1	Reliance.	do.	Killed by a fall of coal.
Mar. 5.	John Rhoder.	do.	27	M.	3	Cameron.	do.	Killed by a premature explosion.
6.	John Hongas.	do.	28	S.		Pennsylvania.	do.	Killed by a fall of coal.
9.	Peter Pecetes.	Laborer.	24	S.		do.	do.	Killed by a fall of slate.
10.	Benjamin Rolling.	Engineer.	49	M.	3	Sterling.	do.	Killed by a fall of slate.
13.	Samuel Cook.	Miner.	52	M.	6	Morris Ridge.	Columbia,	Killed by a rush of coal while loading wagon.
23.	James Fogarty.	Slate picker.	30	S.		Centralia.	do.	Killed by being crushed between elevators and frame.
26.	Patrick Ryon.	Miner.	40	S.		Bast.	Schuylkill,	Burned by an explosion of powder March 17; died March 26.
April 7.	Barnhard Hentz.	Laborer.	21	S.		Short Mountain.	Dauphin.	Killed by a fall of coal.
23.	John Sato.	do.	26	S.		Pennsylvania.	Northumberland,	Killed by being crushed by railroad cars at foot of breaker.
25.	William Wantz.	Slate picker.	12	S.		Burnside.	do.	Killed by being crushed by railroad cars at breaker.
25.	Enock Feriskie.	Miner.	37	M.	2	Locust Gap.	do.	Killed by being thrown out of a runaway wagon on tender slope.
29.	John Webster.	Oiler.	16	S.		Logan.	Columbia,	Killed by being squeezed between mine wagons.
May 31.	John Petery.	Miner.	22	S.		Burnside.	Northumberland,	Killed by a fall of coal.
June 26.	George Straup.	Jig boy.	16	S.		Henry Clay.	do.	Killed by being caught by scraper line in jig house.
30.	Frank Kreiger.	Miner.	30	M.	2	Pennsylvania.	do.	Killed by a fall of coal.
July 10.	Isaac Paul.	Laborer.	23	S.		Cameron.	do.	Killed by falling down slope.
15.	George Conrod.	Loader.	30	M.		Hickory Ridge.	do.	Killed by being crushed between mine wagons.
17.	Paul Penenfskie.	Laborer.	30	M.	2	Burnside.	do.	Killed by a gangway collar falling on him.
17.	Richard Malley.	Miner.	38	M.		Merriam.	do.	Killed by a fall of top coal.
19.	Percy Hummel.	do.	30	S.		Locust Spring.	do.	Injured internally by lifting a lump of coal July 10; died 19th.
26.	Frank Horn.	do.	37	M.	4	Neilson.	do.	Killed by a fall of coal.
28.	John Silker.	do.	33	M.	3	Alaska.	do.	Killed by a fall of slate.

TABLE IV—*Continued.*

Date of accident.	NAME OF PERSON INJURED.	Occupation.	Age.	Married or single.	Number of orphans.	Name of Colliery.	Location—County.	Nature and Cause of Accident in Brief.
Aug. 24,	Daniel Hummel.	Miner, ...	50	M.	3	Williamstown. . . .	Dauphin, ...	Killed by a fall of slate.
31,	Elias Horman.	do.	50	M.	9	Short Mountain. . .	do. .	Killed by a fall of slate.
31,	Charles Shugar.	Laborer, . . .	21	S.	. .	Williamstown. . . .	do. .	Fatally injured August 21; died August 31.
Sept. 1,	Thomas S. Edwards. . .	Miner. . . .	42	M.	1	Logan.	Columbia, ...	Killed by a fall of coal.
5,	John Peroges.	Laborer. . . .	23	S.	. .	Neilson.	Northumberland, .	Killed by falling down hoisting shaft.
9,	Joseph Rolson.	do.	24	S.	. .	do.	do. .	Killed by being run over by mine wagons.
15,	John Brovey.	Miner. . . .	23	S.	. .	Big Mountain. . . .	do. .	Killed by a fall of coal.
18,	Philip Badman.	do.	28	M.	5	Cameron.	do. .	Killed by a rush of fine coal in chute.
26,	Joseph Miller.	do.	24	S.	. .	Reliance.	do. .	Killed by a fall of coal.
Oct. 8,	Joseph Bucknavage. .	Laborer. . . .	25	S.	. .	Pennsylvania, . . .	do. .	Killed by being crushed between mine wagons and chute.
8,	Howard Hock.	do. . . .	19	S.	. .	Burnside.	do. .	Killed by a fall of coal.
16,	Lewis Stodt.	Repairman. .	41	M.	2	Merriam.	do. .	Killed by an explosion of fire-damp.
16,	Walter Greike.	Door boy. . .	16	S.	. .	Reliance, ...	do. .	Killed by being run over by mine wagons.
Nov. 2,	Philip Banhard.	Miner. . . .	.	.	. .	Buck Ridge.	do. .	Fatally injured October 13; died November 2.
11,	Sebastian Hibbel. . . .	do.	45	.	. .	Cameron.	do. .	Killed by a fall of coal.
17,	William Leib	Assistant boss,	32	.	. .	Locust Spring. . . .	do. .	Fatally injured by being crushed between railroad cars and breaker chutes November 12; died 17th.
23,	Frank Chicofski.	Miner. . . .	26	S.	. .	Excelsior.	do. .	Killed by a fall of slate.
27,	Joseph Linderman. . .	do. . . .	43	M.	1	Alaska.	do. .	Killed by being struck by flying piece of coal thrown by a shot.
Dec. 23,	Anthony Sock.	do. . . .	46	M.	6	Luke Fidler. . . .	do. .	Killed by a fall of slate.
26,	Joseph Bartalonie. . .	do. . . .	58	M.	5	Cameron.	do. .	Killed by an explosion of gas.
26,	Bavoni Dominico. . .	do. . . .	45	M.	4	do.	do. .	Fatally injured December 16 by an explosion of gas; died December 26.
29,	John Holzer.	Laborer. . . .	19	S.	. .	Locust Spring. . . .	do. .	Killed by a fall of slate.

TABLE V—*List of Non-Fatal Accidents occurring in and about the mines of the Seventh Anthracite District for the year ending December 31, 1891.*

Date of accident.	NAME OF PERSON INJURED.	Occupation.	Age.	Name of Colliery.	Location.	Nature and Cause of Accident in Brief.
Jan. 7.	Joseph Hatsco.	Driver,		Merriam,	Northumberland county,	Back bruised; fell under dirt dumper.
10.	John Kilker.	do.		Bast.	Schuylkill county,	Arm broken; fell from dirt dumper.
14.	Geo. F. Lee,	Slatepicker,		Williamstown,	Dauphin county	Leg broken; run over by mine truck.
15.	Wm. Croll,	Miner,		Sterling,	Northumberland county,	Burned by an explosion of fire damp.
18.	Barth. Woluskie,	Platform man,		Ferndale,	do. do.	Leg broken; caught in rollers.
20.	Frank Marshinkl,	Miner,		Big Mountain.	do. do.	Back bruised by a fall of coal.
22.	Danl. Fullerman,	do.		Burnside.	do. do.	Leg broken by a fall of coal.
23.	Jerry Esterline,	Doorboy.		Short Mountain.	Dauphin county,	Foot bruised and cut; run over by mine wagons.
Feb. 3.	Frank Longoski,	Slatepicker,		do. do.	do. do.	Arm broken; fell on picking table.
4.	Jno. Dusman,	Miner,		Neilson,	Northumberland county,	Burned by an explosion of powder.
10.	Thos. Teilly,	do.		Williamstown,	Dauphin county,	Hip broken by a fall of slate.
18.	Chas Hood,	do.		Pennsylvania,	Northumberland county,	Leg broken by a fall of coal.
18.	Dennis Whalen.	Breaker engineer,		Morris Ridge,	Columbia county,	Skull fractured by being struck by falling timber.
20.	Anth. McCaffrey.	Bottom man,		Tunnel,	Schuylkill county,	Body squeezed by being caught between car and side of gangway.
25.	Thos. Newton.	Driver,		Williamstown,	Dauphin county.	Leg broken; fell under wagons.
27.	David Schumitz.	Laborer,		Reliance,	Northumberland county,	Leg broken by a fall of coal.
28.	Albt. Koppenhaur.	do.		Williamstown,	Dauphin county.	Leg broken by a fall of slate.
Mar. 3.	E. E. Bensinger,	Tipman,		Locust Gap.	Northumberland county,	Finger cut off; caught between block and wagon.
5.	John Mornt.	Miner,		Buck Ridge,	do. do.	Burned by an explosion of gas.
5.	John Llewellyn.	do.		do.	do. do.	Burned by an explosion of gas.
5.	Wm. Llewellyn.	do.		do.	do. do.	Burned by an explosion of gas.
6.	John Honzas.	do.		Pennsylvania,	do. do.	Seriously injured by a fall of coal.
9.	Alex. Cochinsky.	do.		Excelsior,	do. do.	Face and head cut by coal flying from shot.
9.	Chas. St. Clair.	Driver,		Short Mountain,	Dauphin county,	Body bruised by being caught between wagon and gangway rib.
10.	Wm. Scrathora.	Fire boss.		do. do.	do. do.	Back bruised and two ribs broken by a fall of slate.
10.	Jonathan E. Hank.	Miner.		Williamstown.	do. do.	Leg broken by a fall of coal.
18.	Henry Frorhine.	Bottom man.		Cameron,	Northumberland county,	Leg broken by a piece of coal rolling down slope.
19.	Chas. Schroeder,	Loader,		Locust Gap.	do. do.	Arm broken by lever of car.
23.	Geo. Hiof.	do.		Neilson.	do. do.	Ribs broken by being struck by lever.
26.	Chas. Muschiskie.	Miner.		Sterling,	do. do.	Face and hands burned by gas.
28.	Wm. Berry.	do.		do.	do. do.	Face and hands burned by gas.
28.	Jos. Kazanski.	Driver,		Mount Carmel.	do. do.	Leg broken by being caught between cars.
Apr. 1.	Fred. Parker,	Miner,		Williamstown,	Dauphin county,	Foot badly cut by a fall of rock.
3.	Howell Reese.	do.		Logan,	Columbia county.	Face and head cut by a premature blast.
6.	Jas. Woodward,	do.		Bast.	Schuylkill county,	Eye cut by a piece of coal flying from pick.

TABLE V.—*Continued.*

Date of accident.	NAME OF PERSON INJURED.	Occupation.	Age.	Name of Colliery.	Location.	Nature and Cause of Accident in Brief.
Apr. 7.	Jno. Hughes,	Miner,		Logan,	Columbia county,	Seriously injured by a fall of coal.
11.	Chas. Schisler,	Doorboy,		Enterprise,	Northumberland county,	Caught between door frame and wagon.
13.	Mart Wasalavage,	Miner,		Pennsylvania,	do. do.	Hurt by a fall of coal.
13.	Emanl. Faminini,	do.		do. do.	do. do.	Hurt by a fall of coal.
15.	John B. Lovet,	do.		Cameron,	do. do.	Slightly burned by an explosion of gas.
15.	Patk. Ratigan,	do.		do.	do. do.	Slightly burned by an explosion of gas.
15.	Anth. Sleppen,	do.		Locust Gap,	do. do.	Face and head cut by going down slope in runaway wagon.
15.	Mich. Kiminiskie,	do.		do.	do. do.	Face and head cut by going down slope in runaway wagon.
15.	Peter Duffy,	Laborer,		do.	do. do.	Leg broken by going down slope in runaway wagon.
15.	John Stale, Jr.,	Miner,		do.	do. do.	Leg broken by going down slope in runaway wagon.
15.	John Stale, Sr.,	do.		do.	do. do.	Hips hurt by going down slope in runaway wagon.
16.	Victor Kissinger,	Fireman,		Preston No. 3,	Schuylkill county,	Toes bruised; caught by engine crank.
16.	Anth. Buriski,	Driver,		Big Mountain,	Dauphin county,	Leg badly bruised by falling under wagon.
21.	Harry Shook,	Loader,		Locust Spring,	Northumberland county,	Badly squeezed between mine wagons.
22.	Peter Troscavage,	Miner,		Pennsylvania,	do. do.	Burned by an explosion of gas.
22.	Mathew Bokus,	do.		do. do.	do. do.	Burned by an explosion of gas.
24.	Peter Rumputski,	do.		Reliance,	do. do.	Leg broken by being run over by truck.
24.	Thos. Farrel,	Bottom man,		Cameron,	do. do.	Leg broken by being struck by guide rail which ran down slope.
29.	Jos. Phillips,	Loader,		Burnside,	do. do.	Foot crushed by being caught between mine wagons.
May 1.	Oscar Leader,	Miner,		Hickory Ridge,	do. do.	Struck by a pick while at work.
9.	Henry Lehman,	do.		do. do.	do. do.	Hip bruised by a fall of coal.
18.	Mich. Dolitski,	Laborer,		Pennsylvania,	do. do.	Burned by an explosion of gas.
18.	John Hodock,	do.		do. do.	do. do.	Arm broken by a fall of coal.
25.	Jas. Heilgh,	Miner,		Neilson,	do. do.	Arm broken by a fall of rock.
26.	Victor Hillard,	do.		do.	do. do.	Arm broken and face cut by a premature explosion.
28.	John Helt,	Bottom man,		Pennsylvania,	do. do.	Skull and jaw-bone fractured by being struck by a piece of coal on slope.
29.	Joseph Hanlson,	Miner,		Burnside,	do. do.	Arm broken; fell while working breast.
30.	John Richards,	Driver,		Neilson,	do. do.	While trying to remove a sprag from mine wagon he had his arm so badly injured that it had to be amputated.
June 4.	Lewis Tarerri,	Miner,	24	Pennsylvania,	do. do.	Face and hands burned by an explosion of gas.
6.	Wm. G. Stokes,	Doorboy,	15	Williamstown,	Dauphin county,	Arm cut off by mine wagon running over it.
8.	Jos. Hossock,	Loader,	22	Pennsylvania,	Northumberland county,	Hand squeezed between bumpers of mine wagon.
8.	P. J. Joyse,	Miner,	40	do. do.	do. do.	Face and head cut by a premature explosion.
10.	Sylvestor Vorevego,	do.		Henry Clay,	do. do.	Leg broken by a fall of coal.
12	John Hobaleski,	do.	31	Pennsylvania,	do. do.	Burned by an explosion of gas.
12.	Frank Jacob,	do.	25	do. do.	do do.	Burned by an explosion of gas.

June 12.	Mich. Meehan.	Miner.	22	Williamstown.	Dauphin county.	Body bruised; squeezed between timber and mine wagon.
15.	Chas. Taylor.	do.	55	Hickory Ridge.	Northumberland county.	Leg broken by a fall of coal.
18.	W. J. Downy.	Laborer.		North Franklin.	do. do.	Back bruised by a mine wagon running over it.
19.	John Benninghan.	Miner.		Burnside.	do. do.	Eye cut by a piece of coal flying from pick.
24.	Wm. Samuels.	Carpenter.		Henry Clay.	do. do.	Ribs broken; caught in scraper line.
25.	Adam Novitski.	Miner.	30	Pennsylvania.	do. do.	Badly injured by a fall of slate.
26.	Jos. Shoekeous.	Laborer.		Hickory Swamp.	do. do.	Hurt by a fall of slate.
29.	Jos. Carmitchil.	Driver.	16	Pennsylvania.	do. do.	Back broken; fell under mine wagon.
30.	Bon. Faro.	Miner.		Bear Valley.	do. do.	Arm broken by a fall of coal.
July 1.	Jos. G. Lowley.	do.	34	Short Mountain.	Dauphin county.	Shoulder bone broken by a fall of slate.
1.	John Burke.	do		Preston No. 3.	Schuylkill county.	Hips and back injured by a fall of coal.
6.	Henry Eberly.	Slatepicker.		Bast.	do. do.	Leg injured; caught by elevators.
8.	Jacob Fetterman.	Miner.		North Ashland.	Columbia county.	Shoulder bone and ribs broken by a fall of coal.
8.	John Darsey.	Laborer.	26	Pennsylvania.	Northumberland county.	Burned by an explosion of gas.
8.	M. Feldorico.	Doorboy.	16	do.	do. do.	Burned by an explosion of gas.
8.	C. S. Shoffston.	Miner.	25	do.	do. do.	Injured on back and hips by a fall of coal.
13.	J. Brosnington.	do.	25	do.	do. do.	Back and hips injured by a fall of coal.
13.	Clem Sincoski.	Miner	25	do.	do. do.	Foot crushed between bumpers of mine wagons.
14.	Harry F. Wolf.	Bottom man.	22	Williamstown.	Dauphin county.	Jaw bone broken; struck by a wagon wheel which came down slope.
17.	James McDonald.	Starter.		North Ashland.	Columbia county.	Leg broken; caught by a rush of coal at battery.
Aug. 5	David Anderson.	Driver.	16	Cameron.	Northumberland county.	Leg broken and ankle dislocated; fell off a mine wagon.
13.	John Modul.	Miner.		Big Mountain.	do. do.	Burned by an explosion of gas.
13.	George Ziusuich.	Driver.		do.	do. do.	Burned by an explosion of gas.
13.	Daniel Barry.	do.		do.	do. do.	Burned by an explosion of gas.
13.	Henry Kashner.	do.		do.	do. do.	Burned by an explosion of gas.
14.	Anthony Baranitski.	Laborer.	29	Corbin.	do. do.	Back and leg broken by a fall of coal.
14.	Jos. Parpinski.	Miner.	45	Cameron.	do. do.	Badly injured by a premature explosion.
14.	Richard Walters.	do.		Short Mountain.	Dauphin county.	Leg broken by a fall of coal.
14.	Henry Kinby.	Driver.	15	do.	do.	Burned by an explosion of gas.
19.	George Drishback.	do.	18	Cameron.	Northumberland county.	Bruised; caught between wagon and mine prop.
21.	Charles Shugar.	Laborer.	21	Williamstown.	Dauphin county.	Head and body bruised by a fall of rock.
21.	Jacob Weidle.	Miner.	65	do.	do.	Finger cut off; caught between wagon and prop.
21.	Thomas Kingston.	Driver.	16	do.	do.	Collar bone broken; caught between wagon and prop.
24.	John G. Batman.	Miner.		Short Mountain.	do.	Head and body bruised by a prop falling on him.
25.	Andrew Boluski.	Loader.		Monitor.	Northumberland county.	Shoulder bone broken; fell under mine wagons.
29.	Fred Nagle.	Miner.		do.	do. do.	Hip and head injured by a fall of slate.
Sept. 1.	John Shull.	Loader.	20	Hickory Swamp	do. do.	Body bruised; fell under mine wagon.
2.	John Dickley.	do.	45	do.	do. do.	Body badly squeezed; caught by a lump of loose coal in chute.
7.	Thomas Kinney.	Door boy.		Centralia.	Columbia county.	Thigh badly cut by a wagon running over him.
8.	William Maley.	Miner.		Pennsylvania.	Northumberland county.	Burned by an explosion of gas.
8.	Dennis McGuire.	Driver.		Bast.	Schuylkill county.	Collar bone broken; caught between wagon and prop.
8.	Jesse Long.	Miner.		Burnside.	Northumberland county.	Back and shoulders bruised by a fall of coal.
8.	Samuel Metz.	Bottom man.	39	Corbin.	do. do.	Leg and three ribs broken; struck by a runaway wagon at foot of slope.
14.	Patrick Haffey.	Door boy.		Mt. Carmel.	do. do.	Arm badly cut; caught under wagon wheel.
17.	Benjamin Walters.	Top man.		Williamstown.	Dauphin county.	Shoulder blade and collar bone broken and foot injured; struck by a wagon which jumped the track.
19.	Patrick Rowan.	Miner.		Logan.	Columbia county.	Arm broken by a fall of coal.
23.	John Danko.	Laborer.		Midvalley.	do.	Head and side bruised between mine wagons.
24.	John Wommer.	Slate picker.	17	Williamstown.	Dauphin county.	Arm broken; caught in scraper line.
25.	Frank Dumeskie.	Miner.		Luke Fidler.	Northumberland county.	Seriously injured by falling under wagons while coming up slope.
29.	Emanuel Williams.	do.	24	Williamstown.	Dauphin county.	Arm broken and head bruised by falling down breast.
Oct. 3.	Samuel Morris.	do.		Logan.	Columbia county.	Arm broken; fell while jumping off wagon.
7.	John Weber.	do.		Big Mountain.	Northumberland county.	Leg broken by a fall of slate.
8.	George Inder.	Driver.		Pennsylvania.	do. do.	Arm broken; run over by mine wagon.

TABLE V—*Continued.*

Date of accident.	NAME OF PERSON INJURED.	Occupation.	Age.	Name of Colliery.	Location.	Nature and Cause of Accident in Brief
Oct. 8.	William Johnston.	Loader.		Logan.	Columbia county.	Finger cut off by a piece of coal breaking while lifting into wagon.
12.	Hiram Ruch.	Slate picker.		Short Mountain.	Dauphin county.	Arm broken; fell in breaker.
13.	Philip Barnhard.	Miner.		Buck Ridge.	Northumberland county.	Arm broken by a fall of coal.
15.	Enoch Walden.	do.		Big Mountain.	do. do.	Back hurt by a fall of coal.
16.	George Wolf.	Repairman.		Bear Valley.	do. do.	Both legs broken; caught between gangway rib and a plank which projected from wagon.
21.	Frank Schmidt.	Loader.		Logan.	Columbia county.	Leg broken by a lump of coal running down chute.
22.	Jacob Yapotopski.	Miner.		Locust Spring.	Northumberland county.	Shoulder injured by a fall of slate.
22.	Michael Tuasheskie.	do.		Big Mountain.	do. do.	Back and breast crushed by a fall of coal.
24.	Jacob Debin.	do.		North Franklin.	do. do.	Back and kidneys injured by a fall of coal.
25.	John Morris.	do.	30	Hickory Ridge.	do. do.	Head cut and bruised by a fall of coal.
26.	John Chustoff.	Loader.	20	Hickory Swamp.	do. do.	Fingers blown off by the explosion of a Dualin cap.
28.	Harry Luxton.	Miner.	23	Williamstown.	Dauphin county.	Arm broken, leg and face cut by a fall of coal.
30.	Michael Uhrin.	Loader.		Hickory Ridge.	Northumberland county.	Leg bruised by a rush of coal.
30.	J. W. Glassmire.	Miner.	35	Pennsylvania.	do. do.	Seriously hurt by a fall of coal.
Nov. 1.	Michael Finnen.	Slate picker.		Centralia.	Columbia county.	Seriously injured; fell while coming out of breaker.
2.	James Holden.	Laborer.	15	Hickory Ridge.	Northumberland county.	Seriously squeezed between mine wagons.
6.	Leo Handuoss.	do.		Preston No. 3.	Schuylkill county.	Foot injured; caught between bumpers while coupling wagons.
6.	Peter Quinten.	Miner.		Merriam.	Northumberland county.	Back and hips bruised by a fall of coal.
9.	Park McHole.	Door boy.		Locust Spring.	do. do.	Arm cut; fell under mine wagon.
10.	Lewis Hummel.	Starter.		Burnside.	do. do.	Leg broken and fingers mashed between two pieces of coal.
11.	Frederick Snyder.	Slate picker.		do.	do. do.	Wrist fractured; fell while getting down out of chute.
17.	Augustus Zurack.	Miner.	47	Hickory Ridge.	do. do.	Head and leg hurt by a fall of coal.
18.	David Golet.	do.		Locust Spring.	do. do.	Head and arms cut by a premature explosion.
21.	Thomas Rover.	Laborer.		Reliance.	do. do.	Leg broken by being run over by wagon which jumped the track.
30.	George Godlevki.	Driver.		Hickory Swamp.	do. do.	Toes cut off by being run over by wagon.
Dec. 1.	Richard Bane.	Miner.		Logan.	Columbia county.	Jaw bone broken; struck against collar while coming up slope.
15.	Peter Stranguesy.	Oiler.		North Ashland.	do.	Arm fractured; sprag flew from wheel of mine car.
19.	Charles Nutz.	Miner.		do.	do.	Eye injured; struck by a piece of coal.
19.	James Beard.	do	47	Williamstown.	Dauphin county.	Leg broken by a prop falling on it.
21.	Albert G. Horley.	Driver.		Short Mountain.	do.	Injured seriously across abdomen and back by a mine wagon upsetting on him while unloading it.
22.	Harry McGinnis.	Pump man.		Preston No. 3.	Schuylkill county.	Eye injured; struck by a piece of wood.
29.	Stain Billack.	Miner.		Big Mountain.	Northumberland county.	Back bruised by a fall of rock.

EIGHTH ANTHRACITE DISTRICT.

(SCHUYLKILL AND CARBON COUNTIES.)

OFFICE OF INSPECTOR OF MINES,
POTTSVILLE, PA., *April 2, 1892.*

Hon. THOMAS J. STEWART,
Secretary of Internal Affairs:

SIR: I have the honor herewith to present my annual report as Inspector of Mines for the Eighth anthracite district for the year 1891.

The production of coal for the year 1891 was 3,030,933 tons against 2,579,160 tons of the preceding year, making an increase of 451,773 tons.

There were seventeen accidents causing the deaths of twenty-eight persons, leaving ten widows and thirty-seven orphans, being eleven more fatal accidents than that of the previous year. Sixty-two persons received serious injuries, as against thirty-eight the preceding year.

The great increase in the list of fatal casualities is due to two accidents by which eleven persons lost their lives.

The report contains the usual tables together with other remarks and information that may be of general interest.

SAMUEL GAY,
Inspector.

TABLE NO. 1—*Comparative statement of fatal casualties that occurred during the years 1890 and 1891.*

CAUSE OF ACCIDENTS.	1890.	1891.
Explosions of fire-damp,	3	6
Falls of roof and coal,	4	5
Crushed by mine cars,	4	2
By machinery on the surface,	1	....
By machinery under ground,	....	....
Breaking of ropes or chains,	1	1
Falling down shafts,	1	....
Falling down slopes,	....	....
By blasting material,	1	1
Miscellaneous,	2	13
Total,	17	28

TABLE NO. 2—*Showing number of fatal accidents and quantity of coal produced per life lost by the different companies and individual firms during the year 1891.*

	Number of fatal accidents.	Quantity of coal produced per life lost.
Philadelphia and Reading Coal and Iron Company,	14	118,095 $\frac{6}{14}$
Lehigh Coal and Navigation Company,	7	97,245 $\frac{71}{100}$
Lehigh Valley Coal Company,	2	45,284 $\frac{8}{10}$
Individual firms,	5	114,283

TABLE NO. 3—*Comparative statement of non-fatal casualties during the years 1890 and 1891.*

	1890.	1891.
Explosions of gas,	4	24
Falls of coal and roof,	11	9
Crushed by mine cars,	10	9
By machinery on the surface,	....	1
By machinery under ground,	....	....
Falling down shafts,	....	1
Falling down slopes,	....	....
Explosions of blasting materials,	1	1
Miscellaneous,	12	17
Total,	38	62

TABLE No. 4—*Showing the quantity of coal shipped and estimated quantity used and sold at the mines.*

	1890.	1891.
Quantity of coal shipped by railroads,	2,425,308	2,859,372
Estimated quantity consumed about the mines,	153,852	171,562
Total production,	2,579,160	3,030,933

TABLE No. 5—*Showing a comparison between the years 1890 and 1891.*

	1890.	1891.
Number of persons employed,	9,778	9,872
Quantity of coal mined per life lost,	151,715	108,247
Ratio of employes per life lost,	575	$352\frac{16}{28}$
Number of tons produced per each person seriously injured,	67,263	$48,869\frac{55}{62}$
Tons of coal produced per each employe,	$261\frac{1}{12}$	307

TABLE No. 5—*Continued.*

	Number of persons employed.	Number of persons killed.	Number of persons employed to each fatal accident.
Philadelphia and Reading Coal and Iron Company,	5,765	14	$411\frac{11}{14}$
Lehigh Coal and Navigation Company,	1,536	7	$219\frac{3}{7}$
Lehigh Valley Coal Company,	757	2	$378\frac{1}{2}$
Individual firms,	1,814	5	$262\frac{8}{10}$
Totals and average,	9,872	28	$352\frac{16}{28}$

CONDITION OF COLLIERIES.

It is gratifying to state that the condition of the mines in general is steadily being raised to a higher standard in point of safety, and more particularly in the sanitary condition, notwithstanding the deplorable increase in the loss of life during the year. Had it not been for the two disastrous occurrences that resulted in the deaths of eleven persons, the general accident list that usually makes up a very large proportion of our mining casualities, would have made a much more favorable showing.

As is frequently shown in these reports, a very large percentage of the accidents are due to the recklessness of the employes themselves, which is true without any question of doubt, but the eleven victims above referred to do not come under that category, for I am of the opinion that neither one of the victims had contributed toward the occurrence that cost the unfortunate men and boys their lives.

It would be much more gratifying to us if we could without any conscientious scruples make the same assertion in the defense of those who had the direct charge of the colliery wherein the accidents happened, but the facts and testimony in the case where the seven lives were lost, indicated that there had been a lack of vigilance on the part of those who had charge of the underground workings of the colliery, and I regret very much to say that the coroner's jury that investigated the cause of the sad disaster, were justified in their verdict to some extent in censuring those who had the direct and daily charge of the colliery. It was my opinion at the time of the occurrence, and I have had no reason since to change it, that had there been a reasonable quantity of material retained in the breast it would have given sufficient protection to the battery, so that when the fall of coal occurred it would have prevented the coal from rushing into the gangway in the manner it did, shutting the seven victims in and leaving them no way of escape.

RICHARDSON COLLIERY DISASTER.

This was one of the many deplorable accidents that occur from time to time throughout the mining world. This is however one of the most disastrous that has occurred in this section of the southern coal field in many years, because of there having been the greatest number of lives sacrificed by a single accident. Seven persons lost their lives and three others were seriously injured.

This accident occurred on the twenty-third of October and resulted from a fall of coal in a breast that had been worked up about forty feet and was drawn empty or nearly so on the day of the accident. A large body of coal fell, forcing the battery and timbers out of the chute, knocking five sets of timber out in the gangway, closing it, and shutting the seven unfortunate victims in between the face of the gangway and

the outer world, there to be suffocated by the large volume of gas displaced by the fall of coal. The other three unfortunates luckily were on the outside of the fall. The injuries they sustained resulted from the force of the air and gas being suddenly displaced by the fall.

According to the testimony of Mr. Martin Kelley, the inside foreman of the colliery, this breast No. 7 had been driven by the miners only forty feet, when the face of the coal commenced to fall, or what is more generally known among the mining community of the anthracite coal region, where the veins of coal stand on high angles, the face of the coal had run by its own weight or its gravity, which is not an unusual occurrence in large, steep pitching veins.

In fact all of the breasts up to No. 7 after being driven a short distance, ran and continued to run as the coal was loaded out, until the openings fell through to the old gangway on the lift above. This, as a natural consequence, relieved that part of the workings from a great source of danger, because it made an exit for any explosive gas that might have existed in the breast previous to running through, to escape, relieving both officials and workmen of more or less anxiety.

Mr. Kelley stated that when the face of No. 7 breast ran away the place was practically sealed against any further examination, and in accordance with the custom that had hitherto been carried out in the colliery he ordered his subordinates to load coal from breast No. 7. He also stated that they continued to load coal from No. 7 until the day of the accident, and that up to that time four hundred and twelve cars of coal had been loaded out, when it was reported to him that the breast was empty, which Mr. Kelley subsequently qualified by stating that there remained from ten to fourteen feet of loose coal on the battery, but he was not positive on that point. One thing however he was sure of, that the breast had not run through to the old gangway as the outside breast had done previously. He was also aware, that the place was filled with gas, and that the face of the coal was liable at any moment to fall away in large bodies thereby suddenly displacing the large volume of gas with the probability of an explosion, inasmuch as the velocities of the elements so displaced would very probably force the flame through the gauze of the safety lamp.

Mr. Kelley also stated that he was standing at the tunnel, about two hundred yards from where the accident occurred, and his first impression was, that the gas had been exploded in the manner above mentioned, and he reported such to be the case in a telegram which he sent to the Pottsville office.

In this he was undoubtedly mistaken from the fact that none of the victims of the disaster showed any sign whatever that there had been an explosion of gas, but the source of danger from that element under the circumstances, knowing that the empty breast was charged with gas, and knowing that if a fall occurred, a large quantity of gas would

be suddenly forced down out of the opening to the section of the mine where the men were engaged, it would be quite natural for him to come to such a conclusion, because his past experience in similar cases, together with experiments made by scientific men, have demonstrated the fact that when an inflammable body travels at the rate of eight feet per second the Davy lamp is unsafe, because the high velocity is sufficient to force the flame through the gauze of the lamp.

The officials of the colliery were not the only persons who entertained an apprehension of danger from that source, in fact it was quite evident that the workmen themselves were more or less apprehensive, as it was seldom that a sufficient force could be had to run the colliery to anything near its full capacity.

It is true beyond question that there are many difficulties to contend with in collieries of this character and to cope with them requires more than ordinary care and forethought on the part of the workmen, as well as the colliery officials. It is true that accidents are liable to happen, even when the greatest diligence and the best of judgment are being displayed, and a lack of either is sure to bring about disaster sooner or later. That this accident resulted in consequence of an error cannot be doubted, but we are fully convinced that neither the officials nor the workmen ever for a moment anticipated the closing of the gangway as it was.

Another accident occurred at No. 10 colliery operated by the Lehigh Coal and Navigation Company, resulting in fatally injuring four persons and injuring four others who recovered.

This accident was also the result of a fall of coal which displaced a body of gas, forcing it out of the main gangway for several hundred feet to a lamp station. Beyond that point, the use of naked lights was forbidden, and from the indications it was quite evident that it was at that point the gas was ignited. It was the opinion of the mine officials that one of the victims, James Haggerty, had fired the gas at the bottom of the breast where the fall of coal occurred, they believed that he had been guilty of using an open light in place of his safety lamp. It was however quite evident in my opinion that Haggerty did not fire the gas, from the fact that the effect of the explosion indicated the contrary, Haggerty was not burned, but was killed by the force of the displaced body of gas and air. There was also another person in close proximity to Haggerty who was not burned, and in fact I could find nothing in my examination to indicate that there had been any flame whatever in or about the point where Haggerty was killed. It did not require any close examination to discover that there had been fire at the lamp station, for at this point both men and timbers were scorched.

There had been the usual examination made that morning, as far as was practicable, but in this part of the mine the vein is of an unusual thickness, varying from one hundred to one hundred and fifty feet, con-

sequently there are always large cavities that cannot be examined. Hence in fiery mines it is to be anticipated that there is an unknown quantity of explosive mixture stored up, to be displaced at any time a fall of coal or rock may occur. Notwithstanding the best of discipline may exist, and the most improved safety lamp be in use, the danger still exists, for if an explosive body is displaced by a fall, it is more than probable that the high velocity given to the body of gas would be sufficient to force the flame through the gauze of the lamp, thereby igniting the inflammable body that had been displaced by the fall.

The third accident, which probably requires some little explanation, occurred at the York Farm colliery. It caused the death of one man and severely burned three. Fortunately twelve other persons who were either in the tunnel or about the bottom of the slope, escaped with very slight injuries. The explosion occurred in a tunnel that was being driven. The day before the explosion I had visited the colliery, and in examining the tunnel at the face found indications that they were in close proximity to a vein of coal, to which fact I called the attention of the foreman and the workmen, at the same time telling them not to go into the tunnel with an open light after firing a shot. I told them that in all probability the vein of coal, when they cut it, would suddenly give off a large volume of gas and probably fill the tunnel back to the slope. In fact I took the foreman of the tunnel and interrogated him as to his experience with gas, and I soon found that he had worked for several years in one of the most gaseous mines in the region. I told him that was satisfactory, and repeated in substance what I had already told him, viz., not to go into the tunnel with an open light after firing a shot.

Notwithstanding this, the accident occurred the next day. It is true according to the evidence that the foreman and one of the workmen, after firing a round of shots, went back to the face of the tunnel with a safety lamp and found that gas had been liberated and that the roof at the face showed indications that a fall was about to occur. They came back to the mouth of the tunnel and reported to the balance of the workmen the result of their examination.

In the meantime another party of workmen who were engaged in drawing another branch tunnel from the main tunnel were sent in to prepare a round of holes, and as they were approaching their working place they came in contact with the gas with their open lights, causing an explosion with the result before mentioned.

COLLIERY IMPROVEMENTS MADE DURING THE YEAR.

The new breaker at the York Farm colliery is about completed and ready for the preparation of coal. This new structure is of a very substantial character, fitted out with all of the modern improvements for cleaning and handling a large quantity of coal. In fact the whole of the

plant, hoisting, pumping and ventilating machinery is of a very powerful and substantial character.

This colliery is situated near Pottsville and in the southern Schuylkill basin. The slope is sunk on the south dip of what is locally known as the Black Mine seam, varying from six to nine feet in thickness; from the slope, tunnels have been driven north and south, the latter cutting the Tunnel vein, Rabbit Hole, Faust, Selam and South Selam veins. The north tunnel cut the Selkirk bed; four of these beds range from five to seven and a half feet thick and produce an excellent quality of red ash coal, which for domestic purposes has no superior as a fuel. Four other seams have also been cut on the same dip, varying from two to three feet thick. At the present time however, they are not considered by the officials to be of a workable size. The four larges seams when fully developed will have sixteen gangways opened on them, or there will be four gangways on each of the seams, and supposing each gangway produces fifty tons of marketable coal per day, which in my opinion is a very low estimate, these south dipping veins that are already opened, can produce an output of eight hundred tons per day underneath the lower bed cut at this colliery, the Selkirk.

The state geologists in their sections shown in the geolgical reports, state that are six other red ash beds of coal between the Selkirk and Orchard seams, viz., Sand Rock, Beach Mountain, Little Tracy, Big Tracy, Clarkson, Little Diamond and Big Diamond veins. The latter are the names by which these seams are known and worked under, in the second Schuylkill basin, or the first basin north of the Pottsville basin. Having due regard for the knowledge and ability of the gentlemen who had charge of the geological survey, we say positively that they have been mistaken and have simply doubled the number of beds of coal that exist in the Southern or Pottsville basin in the upper red ash coal measures. It is quite evident that they are also mistaken as to the depth or thickness of the measures between the upper red ash and Mammoth veins or, in other words, their sections indicate that it would require a shaft from six hundred to one thousand feet deeper to reach the Mammoth vein than it would have done, providing they had not credited this section of the coal field with the same vein twice.

The tunnels that are now being driven across the basin will however determine that problem, inasmuch as they will cut all of the coal seams from the highest to the lowest in this basin on their north inverted dip.

Should the veins prove good, this tunnel will open a very large body of coal as it will pass through at least fourteen distinct beds of coal if it is driven to its proposed destination.

The annual examination of persons applying for certificates of qualification for mine foremen was held in Pottsville, July 8th and 9th. The board of examiners were Samuel Gay, Inspector, Thomas Doyle, superintendent, and James F. Welsh, miner.

Sixteen of the applicants who appeared before the board passed a satisfactory examination, and were recommended for qualification. Their names are as follows:

Lewis Minachbach, ... Tremont.
George K. Young, ... New Boston.
Charles Farney, ... St. Clair.
James Flemming, ... Donaldson.
William T. Jones, ... Minersville.
John Conwell, ... Branchdale.
James Tracy, ... Minersville.
Andrew Ganly, ... Branchdale.
William Beverage, ... Swatara.
Joseph Zimmerman, ... Pottsville.
Thomas Brennan, ... Heckshersville.
John Kelley, ... Minersville.
James Reese, ... Morea.
David Griffiths, ... Good Springs.
Elias Snyder, ... St. Clair.

TABLE 1.—*Showing Location of Collieries in the Eighth Anthracite District.*

NAME OF COLLIERY.	Name of Operator.	Location—County.	Name of Superintendent.	Postoffice Address.
Middle Creek	Philadelphia and Reading Coal and Iron Co.	Schuylkill	R. C. Luther	Pottsville.
Phenix Park No. 3	do. do.	do.	do.	do.
Thomastown	do. do.	do.	do.	do.
Otto	do. do.	do.	do.	do.
Glendower	do. do.	do.	do.	do.
Beachwood	do. do.	do.	do.	do.
Richardson	do. do.	do.	do.	do.
Brookside	do. do.	do.	do.	do.
East Franklin	do. do.	do.	do.	do.
Pine Forrest	do. do.	do.	do.	do.
Good Spring	do. do.	do.	do.	do.
Silver Creek shaft	do. do.	do.	do.	do.
Old Lincoln	do. do.	do.	do.	do.
Eagle Hill	do. do.	do.	do.	do.
No. 10	Lehigh Coal and Navigation Company	do.	W. D. Zehner	Lansford, Carbon county.
No. 8	do. do.	do.	do.	do. do.
No. 12	do. do.	do.	do.	do. do.
No. 11	do. do.	do.	do.	do. do.
Kaska William	do. do.	do.	do.	do. do.
New Boston	Middle Lehigh Coal Company	do.	T. D. Jones	New Boston.
Morea	Dodson Coal Company	do.	D. I. Thomas	Morea.
Oak Hill	Leisenring & Co.	do.	William Swenk	Minersville.
Greenwood No. 13	Thomas Oliver	do.	Isaac Christ	Tamaqua.
Flowery Field				do.
West Lehigh	Young & Co.	Schuylkill	John Young	do.
Ellsworth	J. H. Davis & Bros.	do.	J. H. Davis	Newcastle.
Schuylkill Valley	Tyler & McTurck		Richard White	Pottsville.
Reserve	Denning Bros.	Schuylkill	William Denning	St. Clair.
East Lehigh	Joseph Mitchell		Joseph Mitchell	Tamaqua.
Chamberlin	Thompson & Hyat	Schuylkill	Edward Thompson	St. Clair.
Hoocker	Linderman & Co.	do.	W. D. Kener	Pottsville.
Peach Orchard	C. B. Selleman	do.	C. B. Selleman	do.
Feager Ridge	Lehigh Valley Coal Company	do.	W. A. Lathrop	Wilkesbarre.
Blackwood	do. do.	do.	do.	do.
York Farm	do. do.		do.	do.
Kickline	Sullivan	Schuylkill	E. A. Sullivan	Minersville.
Eagle	Thomas Crockson	do.	Thomas Crockson	St. Clair.
Lytle	Lytle Coal Company	do.	Hosie	Minersville.

TABLE II—*Gives the total number of tons of coal mined in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Eighth Anthracite District for the year ending December 31, 1891.*

NAME OF COLLIERIES.	Location—Schuylkill County.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs of powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	High explosives.
Middle Creek Shaft	Middle Creek	52,799	170	270			1,386	20	44		5,065
Phenix Park No. 3	Minersville	17,957	114	209			586	14	19		1,589
Thomaston	Hecksherville	75,951	164	393	1		1,091	49	52		6,850
Otto	Branchdale	149,142	226	574	2		1,935	38	69		17,825
Glendower	Taylorsville	112,228	221	524	2		2,472	20	57	1	6,852
Beachwood	Mount Laffe	72,185	220	288			1,458	20	51		1,529
Richardson	Hecksherville	60,975	165	265	7		810	35	25		10,336
Brookside	Tower City	298,147	290	815			2,939	62	106		6,696
East Franklin	Tremont	52,606	196	233	1		884	8	24		2,394
Pine Forest	St. Clair	121,072	239	493			5,283	19	25		3,300
Good Spring	Good Spring	109,666	286	391	1		3,900	22	23		7,334
Silver Creek Shaft	New Philadelphia	143		94			10	6	6		14,207
Old Lincoln	Lorberry	268,378	289	714			7,895	36	74		6,730
Eagle Hill	Eagle Hill	168,514	226	504			1,783	32	58		11,624
Lehigh Coal and Navigation Company No. 10	Coaldale	167,830	228	503	6		1,520	37	72		8,650
Lehigh Coal and Navigation Company No. 8	do	188,808	212	404			360	37	68		9,750
Lehigh Coal and Navigation Company No. 12	do	79,884	216	226			1,500	16	36		5,600
Lehigh Coal and Navigation Company No. 11	do	131,357	219	387	1		2,100	19	45		10,400
Kaska William	Middleport	74,349	189	219			356	17	32		
Middle Lehigh	New Boston	143,793	210	329	2	6	3,609	57	51		1,100
Morea	Morea	181,719	235	413	2	4	3,800	30	40		15,925
Oak Hill	Minersville	86,662	241	215	1		1,685	20	9		2,350
Greenwood No. 13	Tamaqua	43,535	234	69			495	4	16		
Flowery Field	Wadesville	2,308		38			150				
West Lehigh	Tamaqua	5,570	121	30			60	3	6	1	
Ellsworth	Newcastle	17,811	278	39			165	3	4		
Schuylkill Valley	do	17,292	216	40			100	3	4		
Reserve	Wadesville	6,196	215	18			220	2	2		
East Lehigh	Tamaqua	6,598	130	21			180	1	3		

TABLE II—*Continued.*

NAME OF COLLIERIES.	Location Schuylkill County.	Total Shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs of powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	High explosives.
Chamberlin	St. Clair	15,850	224	61			900	4	3		
Hoecker	do.	20,212	156	118			338	6	4	1	
Peach Orchard	Wadesville	4,184		59							
Yeager Ridge	Newtown			21							
Blackwood	Blackwood	90,569	248	428		1	5,635	10	26	3	11,075
York Farm	Pottsville	4,000		308							
Reckline	Thomaston	3,440		19							
Eagle	St. Clair	3,267		10							
Lytle	Minersville	4,408									

TABLE III.—*Showing the number of each class of Employes at each Colliery in the Eighth Anthracite District, during the year 1891.*

NAME OF COLLIERIES	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand total inside and outside.
	Inside foremen.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Doorboys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slatepickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Middle Creek shaft	4	74	43	48	6	6	181	1	5	9	46	37	1	99	270
Phenix Park No. 3	3	88	12	29	8	4	124	1	4	6	27	25	2	65	209
Thomaston	5	102	26	77	14	3	227	2	8	16	63	75	2	166	393
Otto	7	173	35	114	17	10	356	1	20	19	78	98	2	218	574
Glendower	5	164	38	103	22	13	345	2	8	18	55	94	2	179	524
Beachwood	4	106	18	58	8	9	203	1	4	7	40	32	1	85	288
Richardson	4	82	27	31	4	4	152	1	8	16	30	56	2	113	265
Brookside	6	148	94	189	41	8	486	2	30	28	115	150	2	327	813
East Franklin	3	75	25	27	9	2	141	1	3	4	35	48	1	92	233
Pine Forest	3	188	41	36	14	11	313	2	5	8	90	73	2	180	493
Good Spring	3	129	38	56	7	6	239	1	8	8	68	65	2	152	391
Silver Creek shaft		10		10		6	26	1	20	4		43		68	94
Old Lincoln	4	258	86	140	33	1	522	2	33	15	82	78	2	192	714
Eagle Hill	7	134	41	93	21	14	310	2	7	18	98	67	2	194	504
Lehigh Coal and Navigation Company No. 10	3	125	13	96	26	15	278	1	6	16	126	76		225	503
Lehigh Coal and Navigation Company No. 8	5	154	3	85	25	9	281	1	8	15	78	57		159	440
Lehigh Coal and Navigation Company No. 12	3	65	16	40	14	7	145	1	2	1	52	20		81	226
Lehigh Coal and Navigation Company No. 11	5	99	15	62	16	10	207	1	5	12	102	60		180	387
Kaska William	1	42	20	47	12	2	123	1	5	12	40	56		96	219
	5	99	15	62	16	10	207	1	5	12	102	60		180	387
Middle Lehigh, New Boston	1	8	23	78	33	7	150	2	8	30	70	33	7	150	329
Morea	2	89	19	56	17	7	190	1	9	17	132	60	4	223	413
Oak Hill	2	87	28	10	9	1	137	1	5	9	40	20	3	78	215
Greenwood No 15	1	18	15	4	62	16	37	1	3	1	18	10	1	32	69
Flowery Field	1	20	3		1	2	26	1	1	1	5	4		12	38
West Lehigh		6	5		1		12		5		9	4	15	18	30
Ellsworth		12	6		2	2	22	2	1		12			19	39
Schuylkill Valley		12	6		3	22	22		3	1	10			18	40
Reserve		7	3				10	4	3	1	3	1		8	18
East Lehigh		6	1		1		8	1			7	5		13	21
Chamberlin	1	24	11		3		38	2	1	2	13			23	61

TABLE III– *Continued.*

NAME OF COLLIERIES.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand total inside and outside.
	Inside foreman.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Doorboys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slatepickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Hoocker, Mount Hope	1	46	27	.....	6	.....	79	2	2	3	15	20	1	43	122
Peach Orchard	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	59
Feager Ridge	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21
Blackwood	4	200	47	17	12	2	282	1	6	7	98	85	3	200	482
York Farm	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	308
Kickline	.....	.....	.....	.....	.....	.....	17	.....	.....	.....	.....	.....	.....	.....	25
Eagle	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10
Lytle Coal Company	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	35
Total	180	2,842	800	1,538	453	189	5,916	76	48	316	1,759	1,512	57	3,888	9,804

TABLE IV.—*List of Fatal Accidents occurring in and about the mines of the Eighth Anthracite District for the year ending December 31, 1891.*

Date of accident.	NAME OF PERSON INJURED.	Age.	Married or single.	Number of orphans.	Name of Colliery.	Location—Schuylkill County.	Nature and Cause of Accident in Brief.
Feb. 2.	John Keck,	50	M.	...	Lehigh Coal and Navigation Company No. 10.	Coaldale,	A piece of gangway timber rolled on him whilst engaged in making timbers on the surface, fatally injuring him.
17.	William Gallagher	20	S.	...	Goodspring,	Goodspring,	Fatally injured by being crushed between the bumpers of railroad cars on the surface.
26.	Michael Renolds,	...	...	...	Glendower,	Taylorsville,	Killed by a fall of top coal in a breast in which he was working.
25.	Patrick McIntire,	...	M.	...	Lehigh Coal and Navigation Company No. 11.	Coaldale,	Fatally injured by being burned by the explosion of a keg of powder which he was using.
Mar. 14.	William Southern,	...	M.	...	Morea,	Morea,	Died from injuries received from a fall of coal.
Apr. 11.	William Greenaway,	22	S.	...	Lehigh Coal and Navigation Company No. 10.	Coaldale,	Died from injuries received from the breaking of the hoisting rope. He went into the cage-pit whilst the cage was being hoisted and was injured by the flying missiles from the wreck.
11.	James Keathing,	37	M.	1	Oak Hill,	Minersville,	Killed by a fall of top coal.
May 1.	Peter Klouskie,	...	S.	...	Morea,	...	Died from injuries received by being struck by a mine car at the bottom of the slope.
8.	James Haggerty,	...	S.	...			
8.	Fred Newroth,	...	S.	...	Lehigh Coal and Navigation Company No. 10 colliery.	...	Fatally injured by an explosion of gas, which caused the death of four persons.
8.	William Backhouse,	...	S.	...			
8.	David Reese,	...	S.	...			
June 8.	Edward Hammer,	...	S.	...	Glendower,	...	Killed whilst he was in the act of starting a battery, by being caught by a rush of coal.
Aug. 8.	John Carbois,	...	S.	...	York Farm,	...	Died from the effects of having been burned by an explosion of gas.
20.	John Leinger,	16	...	...	East Franklin,	...	Died; supposed to have been kicked by a mule. The boy walked home as usual, apparently but slightly injured, but he died a few days after.
20.	Michael O'Neil,	18	S.	...	Otto,	...	Head crushed between face of tunnel and a mine car.
Oct. 31.	John Watkins,	...	M.	...	Morea,	...	Fatally injured by being crushed between car and timber.
2.	Harry Rosewame,	37	M.	5	York Farm,	Pottsville,	Killed by a piece of rock striking him whilst he was passing along the tunnel; another workman was in the act of pulling the rock down. This workman, however, warned Rosewame to keep back, which he refused to do, and in consequence he lost his life.

TABLE IV—*Continued.*

Date of accident.	NAME OF PERSON INJURED.	Age.	Married or single	Number of orphans.	Name of Colliery.	Location.	Nature and Cause of Accident in Brief.
Oct. 3.	John Lawler,	50	S.		Richarson,	Glencarbon,	These seven unfortunate men lost their lives by being suffocated by gas; by reason of a pillar giving way in a breast, the coal, in consequence of the breast and coal chute being empty, rushed into the gangway, knocking out several sets of timber, closing the only available outlet for the unfortunate victims' escape.
3.	Winfield Mack,	35	M.	3			
3.	Joseph Shields,	32	S.				
3.	John Salmon,	19	S.				
3.	Thomas Clancy,	65	M.	4			
3.	Michael Welsh,	54	M.	4			
3.	John Pursell,	41	M.	3			
Nov. 5.	James Rogers,	45			New Boston,	New Boston,	Died from the effects of being burned by an explosion of gas.
Dec. 15.	James Mulhall,				Thomaston,	Thomaston,	Killed by a fall of coal in the breast in which he was working.
24.	Thomas James,	49	M.	7	Otto,	Branchdale,	Caught between a piece of timber and a piece of rock whilst in the act of starting a battery at the bottom of the breast in which he was workin .

TABLE V.—*List of Non-Fatal Accidents occurring in and about the Mines of the Eighth Anthracite District for the year ending December 31, 1891.*

Date of accident.	NAME OF PERSON INJURED.	Married.	Name of Colliery.	Location—Schuylkill County.	Nature and Cause of Accident in Brief.
Jan. 15.	Peter Berry,		Blackwood,	Blackwood,	Leg broken by a piece of slate which slipped out of the bottom.
20.	John Mocker,		York Farm,	Pottsville,	Foot injured by being struck by a prop.
20.	Peter Campion,		Thomaston,	Thomaston,	Leg injured by being run over by a dirt dumper.
24.	Elias Ollt,		Old Lincoln,	Lorberry,	Back injured by fall of slate.
30.	Jerry Willimer,		Chamberlin,	St. Clair,	Slightly burned by an explosion of gas.
30.	David Williams,				
30.	James Cresswell,				
Feb. 3.	Chas. Huber,		Lincoln,	Lorberry,	Leg broken by being struck by a piece of slate.
6.	Thomas Eagen,		Richardson,	Glencarbon,	Slightly burned by gas.
12.	Lewis Kline,		Kaska William,	Middleport,	Back hurt by fall of coal.
23.	John Brennan,		Beachwood,	Mount Laffe,	Slightly burned by gas.
26.	Wm. Broinoff,		Eagle Hill,	Eagle Hill,	Slightly burned by gas.
27.	James McFarlan,		Repplier,	Newcastle,	Slightly burned by gas.
Mar. 24.	John Clemans,		New Boston,	New Boston,	Leg fractured; a gangway collar rolled on him.
31.	Chas. Ayuska,		Morea,	Morea,	Leg fractured by being caught by a rush of loose coal.
Apr. 3.	Martin Nash,		Richardson,	Glencarbon,	Leg broken by being struck by a piece of coal.
23.	Frank Shaumper,		West Brookside,	Tower City,	Leg broken by being caught between cars.
29.	Martin Renolds,		Blackwood,	Blackwood,	Injured by a fall of rock.
May 1.	Kabronze,		Morea,	Morea,	Both legs fractured by being struck by a mine car.
8.	John Curtis,		Morea,	Morea,	Eyes injured by the premature explosion of a blast.
8.	Peter Schnider,		Hoocker,	St. Clair,	Ribs fractured by being kicked by a mule.
11.	John Heben,		Ellsworth,	Newcastle,	Legs cut off by being caught in breaker rolls.
13.	Lawrence Bergoith,		Blackwood,	Blackwood,	Leg broken by a fall of slate.
15.	John Mack,		Pine Forrest,	St. Clair,	Back hurt by being struck by car.
29.	Edward Fegley,		Brookside,	Tower City,	Leg broken and badly injured by a fall of coal.
Apr. 16.	John D. Davis,		L. C. & N. Co., No. 10,	Coaldale,	Burned and otherwise injured by an explosion of gas that was displaced and driven down into the gangway where it was ignited by an open lamp.
16.	Frank C. Donald,	S.			
16.	James Gallagher,				
16.	David Reese,				
May 29.	Thomas Edwards,	M.	Eagle Hill,	Eagle Hill,	Slightly burned by gas.
29.	John Mamon,	M.	Eagle Hill,	Eagle Hill,	Seriously injured by a fall of coal; died at Miners' hospital.
June 9.	John Farrel,		Lincoln,	Lorberry,	Ruptured by jumping off a car.
19.	John Kasion,		Beachwood,	Mount Laffe,	Hips and back bruised by being caught between car and timbers.
23.	Murt Brenan,		Glendower,	Taylorsville,	Hurt by falling down an air-shaft.
July 2.	James Belch,		Blackwood,	Blackwood,	Slightly injured by being caught between car and door frame.
7.	Farrel Donely,		Beachwood,	Mount Laffe,	Injured by a fall of slate.
8.	Benj. Howard,		Eagle Hill,	Eagle Hill,	Knee hurt by striking it against a collar.
10.	Bernard Dougherty,		Eagle Hill,	Eagle Hill	Head cut; fell in manway.

TABLE V- *Continued.*

Date of accident.	NAME OF PERSON INJURED.	Married.	Name of Colliery.	Location—Schuylkill County.	Nature and Cause of Accident in Brief.
July 22.	David Williams.		Eagle Hill.	Eagle Hill.	Hip injured by being caught between car and prop.
Aug. 8.	James Iglaback.	S.	York Farm.	Pottsville.	Severely burned by an explosion of gas in a tunnel in which they were working.
8.	John Connor.				
8.	Wm. Conly.				
8.	Joseph Robertson.				
8.	David Davis.				
8.	Harry Zimmerman.				
8.	Chas. Sawer.				
8.	Scot Brubacker.		York Farm.	Pottsville.	Slightly burned upon the face by gas.
8.	George Alexandria.				
8.	George Tearney.				
8.	Robert Kelley.				
8.	James Miller.				
12.	John Canfield.		Glendower.	Taylorville.	Arm broken by falling under a car.
21.	Timothy Corcorn.		Pine Forrest.	St. Clair.	Arm broken; fell in the breaker.
21.	Wm. Lehman.		East Franklin.	Tremont.	Arm broken; fell in the breaker.
Sept. 2.	Peter Weber.		Blackwood.	Blackwood.	Leg slightly hurt by a fall of clod.
5.	Daniel Shull.		Blackwood.	Blackwood.	Kicked by a mule.
24.	John Shiery.		Eagle Hill.	Eagle Hill.	Kicked by a mule.
Oct. 3.	James Brum.		Richardson.	Glencarbon.	Severely injured from a concussion of air, caused by the running of a chain pillar, the breast being empty and the angle being about 50 .
3.	Tim Conville.				
3.	Willie Gront.				
6.	Miles Warfield.		Blackwood.	Blackwood.	Leg broken by a fall of coal.
6.	John Muskenumus.		Blackwood.	Blackwood.	Leg broken by a fall of coal.
15.	Frank Swole.		Kaska William.	Middleport.	Leg and arm broken by falling from a car on railroad.
28.	John Kamot.		Beachwood.	Mount Laffe.	Head cut by being accidently struck by a pick.
Dec. 1.	Peter Maller.		Brookside.	Tower City.	Arm broken by being caught while coupling cars.
7.	George Hancock.		Thomaston.	Thomaston.	Thigh broken by a fall of coal.
7.	Samuel Gardiner.		Lincoln.	Lorberry.	Slightly burned by gas.
7.	Oliver Link.		Morea.	Morea.	Leg broken by a log rolling on him.

BITUMINOUS MINE DISTRICTS

19-12-91.

FIRST BITUMINOUS DISTRICT.

(ALLEGHENY, FAYETTE, GREENE, WASHINGTON AND WESTMORELAND COUNTIES.)

HON. THOMAS J. STEWART, *Secretary of Internal Affairs:*

SIR: In compliance with section ten of the act of June 30, 1885, known as an act relating to bituminous coal mines and providing for the lives, health, safety and welfare of persons employed therein, I have the honor to present my seventh annual report as Inspector of mines for the First bituminous district for the year ending December 31, 1891.

The usual tables will be found in this report together with an explanation of each fatal accident.

I am sorry to say there has been an increase of five fatal accidents over the year 1890, but I am pleased to note a decrease of nine of the non-fatal ones. It will be seen by the table, under the head of "Causes of Accidents," that the number is fifty-two, while Table No. 2 gives sixty-eight, this is caused by some minor injuries not reported by the mine boss in his monthly report, but given in the operators' annual. The law only requiring the serious ones to be reported by the person in charge of the mine.

It will be seen by the statistics that there has been an increase in the coal production over the previous year of 155,234 tons. There were eleven new mines opened and two abandoned during the year. The general condition of the mines in the district is fair. I give a description of the haulage plant used at the "Anderson Mine" with a cut of the engine, etc.

A general description of each mine is also given.

All of which is respectfully submitted.

HENRY LOUTTIT,
Inspector.

MONONGAHELA CITY, *March 14, 1892.*

MINING STATISTICS.

Number of mines operated in the district,	66
Number of tons of coal mined,	3,943,265
Number of tons shipped,	3,951,266
Number of tons of coke produced,	1,000
Number of days worked as reported,	8,850
Number of miners employed,	7,531
Number of outside men,	718
Total number employed,	8,249
Number of horses and mules,	468
Number of mine locomotives,	5
Number of steam boilers,	75
Number of coke ovens reported,	20
Number of kegs of powder reported as used in the mines,	8,962
Number of fatal accidents,	20
Number of non-fatal accidents,	68
Number of tons produced per each fatal accident,	197,163.25
Number of tons produced per each non-fatal accident,	57,989+
Number of widows by these casualties,	7
Number of orphans by these casualties,	20
Number of persons employed per fatal casualty,	412
Number of persons employed per non-fatal casualty,	137

CAUSES OF ACCIDENTS.	Fatal.	Non-fatal.
By fall of slate,	9	23
By fall of coal,		4
By fall of slate and coal,	4	2
By premature blast,	2	2
By cars,	3	11
By falling of the tipple trestle,	1	
By falling from tipple trestle,		2
By falling roof,	1	4
By falling horse-back,		1
By fire-damp,		1
Misellaneous,		2
Total,	20	52

MINES ON THE MONONGAHELA DIVISION OF THE PENNSYLVANIA RAILROAD.

Fidelity.—When examined, November 23, this mine was in fair condition. Cubic feet of air entering the mine, 21,125.

Blyth Mine.—I examined this mine November 12 and found the general condition of the workings fair. The inlet air measurements showed 23,310 cubic feet.

Acme.—On each of my examinations of this mine during the year I have found the general condition fair.

Buffalo.—On my last examination of this mine the general condition was fair.

Allen.—A ventilating furnace has been put in at this mine during the year which is producing air in sufficient quantities to keep the mine in a healthy condition. When examined, December 4, there was 13,600 cubic feet of air entering the mine.

Condition of mine fair.

Beaumont.—When examined last this mine was in a fair condition.

During the year the company has put down a slope which has a dip of one in six and 720 feet in length, out of which they are hoisting the products of the mine; heretofore they have used a shaft for that purpose. They have also erected a ventilating fan.

Courtney.—When examined, November 18, the general condition of the workings was fair.

MINES ON THE PITTSBURG AND WHEELING DIVISION OF THE B. & O. R. R.

Anderson Mine.—The tail rope system of haulage has been introduced in this mine during the year, of which the following is a general description:

The engines are of 100 horse power with boilers, ropes and electric signal system complete.

The engines, of which the accompanying cut is an illustration, consist of two cylinders 13 inch bore by 15 inch stroke, coupled at right angles to one engine shaft which is geared to the drum shaft by heavy gearing.

The two drums are each 5 feet in diameter by 30 inch face with flanges to hold 9,000 feet of three-fourth-inch hauling rope.

Both drums are loose upon the shaft, the heads being fitted with hard bronze bushings and are connected to the drum shaft by means of heavy patent band friction clutches which are securely keyed to the drum shaft and are both operated by the one-hand wheel shown in cut.

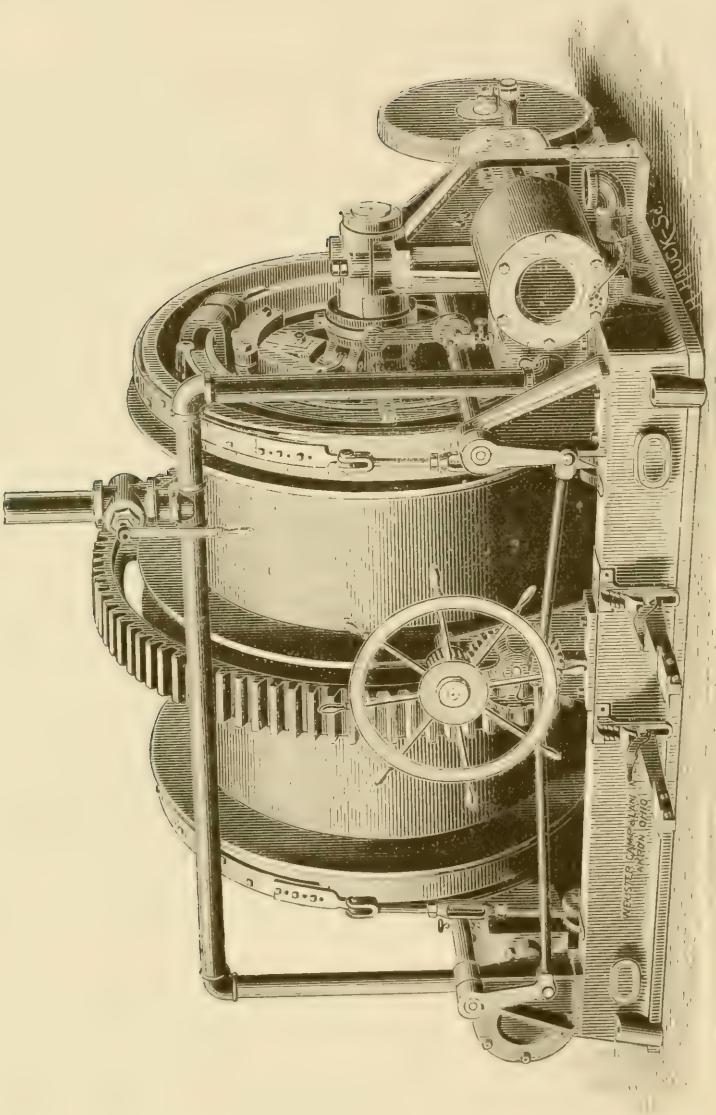
Each drum is provided with a separate brake band operated by foot levers on either side of the hand wheel for operating clutches and in convenient reach of the operator without leaving his position.

By this arrangement, when one drum is driven by the engine the other runs loose upon the shaft, but is controlled by the brake, thus keeping just the required tension on the ropes.

Steam for operating this plant is supplied by two steel cylinder boilers, each 40 inches in diameter by 30 feet long, which supply more than enough steam for the engines.

When hauling, the trip-rider can communicate at any time with the engineer by means of the electric signal system, which reaches every part of the mine in which the ropes are placed; this arrangement allowing the trip rider to start or stop the trip at any desired point in the mine.

At present the hauling is on the main entry and one side entry, but



WINDING DRUM, ANDERSON MINE.

the arrangement is such that at any future time it may be extended to haul on as many side entries as desired.

The present distance hauled is 3,400 feet over a variable grade, the heaviest grade being 20 feet in 1,500 feet against the load.

The engines will haul fifty tons of coal per trip at an average speed of 600 feet per minute, which makes thirty-six trips per day, or a hauling capacity of 1,800 tons of coal per day.

When hauling at the maximum distance of 9,000 feet, the capacity would be sixteen trips or 800 tons per day, which is far in excess of what could be accomplished by mule haulage.

The labor required to operate this plant consists of an engineer, who also fires the boilers, and a trip-rider to accompany the trip, change the ropes when running into the side entry, and assist in changing from the loaded to the empty sets at the end of the haul.

The entire plant was planned and built by the Webster, Camp and Lane Machine Company, of Akron, Ohio, the well-known builders of engines and mining machinery.

When examined last, December 30, the general condition of the mine was fair.

Gastonville Mine.—This mine was not in operation when I examined it on December 29, but I found it in fair condition.

Cubic feet of air at inlets, 15,640.

Germania Mine.—This is a new mine opened during the year, Germania Gas Coal Company, operators. Ventilation is produced by an exhaust fan which was formerly at the Union Valley mine. The mine consists of four butts and two face headings.

Condition of mine on my last visit, fair. Cubic feet of air entering the mine, 19,350.

Nottingham Mine.—When examined last the ventilation was inadequate in parts of the mine; suggestions were made to remove the cause of complaint.

On September 5 a sad accident occurred at this mine, E. F. Miller, the mine-boss, was fatally injured by the falling of the tipple. (See particulars of this fatality under the head of fatal accidents.)

Hackett Mine.—This mine was opened during the year; located a short distance above the Germania mine.

On my last examination of the mine the ventilation was very unsatisfactory, I wrote the company in regard to the matter and they have since put in a furnace and I am informed it is giving good results.

Eclipse Mine.—When examined last I found the mine in fair condition as regards ventilation, but the drainage was unsatisfactory in parts of the mine.

Snowden Mine.—In my report for 1890 I noted that brick stoppings would be put in the mouth of the old workings where the natural gas pipes cross over, this has been done; I find no change in the condition

of this mine in regard to the pipes as yet, but a constant watch is kept over the matter by the officers in charge of the mine. On my last visit on December 31, I found it in pretty fair condition.

Cubic feet of air entering the mine, 21,500. Persons employed, 166 inside.

MINES ON THE MONONGAHELA RIVER.

Brown.—A new drift opened, located on the east side of the river opposite Monongahela City. A temporary incline and tipple have been built. Entries are being driven to open up the mine.

Ella.—This mine is opened in the property of the old Rea mine. A trestle and tipple have been built. Entries are being driven and a few rooms turned.

Little Alps.—This is also a new mine, located on the east side of the river a short distance below Lucyville and opened as a drift.

Little Redstone.—This mine was in fair condition on my last visit, December 24. They were employing 73 miners, 5 boys, 9 drivers and 8 other persons. Cubic feet of air entering the mines, 14,847.

Black Diamond.—When examined last, the condition, as regards ventilation, was not up to the requirements in parts of the mine. While measuring the outlet air, I noticed that the fire in the furnace was not very brisk, I called the mine-boss' attention to the matter and it seemed that the person having charge of it was not obeying the orders given him, which was to keep the furnace up to its fullest capacity. Owing to the quantity of gas given off in the mine and the extent of the workings, a fan would be the proper ventilator here. Examined December 22. Cubic feet of air passing furnace, 18,500.

Albany.—Examined December 7. The general condition of the mine was fair.

Robbins.—This mine has been abandoned.

Fayette City.—Examined November 24. Cubic feet of air entering the mine, 21,250. Persons employed inside, 187. They are making arrangements to put in a fan at this mine which will be placed in the mouth of an entry known as No. 10.

Champion.—When examined last this mine was in fair condition.

Lovedale.—When examined last (November 10) was, as regards ventilation and drainage, in fair condition. Cubic feet of air passing furnace, 19,980.

Stone.—On my last visit to this mine (November 9) it was not in operation.

Jefferson.—Examined November 2. Condition of mine, fair. In my annual report for the year 1890 I mentioned that a natural gas company had a line over part of this mine, and that some of the workings were being driven toward the aforesaid line; before those places were worked in proximity to the line, the gas company's attention was called

to the matter and their engineer worked out on the mine map the quantity of coal which should be left to prevent the strata from breaking immediately under and in proximity to the line. The places marked are known as Nos. 14, 15 and 16 on entry 12, and 16, 17, 18 and 19 on entry 13. I examined the surface near the line on December 5, and it seemed as if there had been a movement of the strata near the line, the mine-boss informed me that previous to my visit, crevices were plainly visible on the surface near the pipe line.

Eclipse.—This mine has lately been purchased by a company known as the "Eclipse Coal Company" which is making extensive improvements in and outside of the mine.

Camden.—When examined last this mine was in a very satisfactory condition. There was 66,660 cubic feet of air entering the mine.

Snow Hill.—When examined last, was, as regards ventilation and drainage, in a fair condition. Air measurements taken showed 18,150 cubic feet at outlet.

Catsburg.—When examined last the ventilation was in part of the mine unsatisfactory, and I take it that it will not be much improved with the present system of ventilation. I have called the operators attention to the matter and arrangements are being made to put up a fan 16 feet in diameter. A shaft has been sunk where the fan will be placed. The outlet air measurements showed 38,000 cubic feet passing through the fan.

Horner & Roberts Nos. 3 and 4.—On my last examination of these mines they were in fair condition, except that a few persons were working ahead of the air current in No. 3 mine.

Banner.—When examined last this mine was in a fair condition.

Hilldale.—On examination this mine was found in fair condition.

Garfield.—This mine has not been in operation during the entire year.

Fulton.—This mine was only in operation 50 days during the year. They gave employment to 90 miners, 10 boys, 6 drivers and 16 other persons. When examined last was in a fair condition as regards ventilation and drainage.

Amity.—When examined last was in fair condition.

Rock Run.—The old mine has been abandoned and they are now opening up a new mine a short distance from the old one. The coal from the new mine will be run over the trestle and tipple of the former.

Caledonia.—On my last examination the general condition of this mine was fair.

Cincinnati.—When inspected last was in fair condition.

American.—Was examined December 8. The ventilation in parts of the mine was not satisfactory. I called the attention of the superintendent of the mine to the matter, and I am informed that a fan 25 feet in diameter will be put up. This mine is supposed to connect with a new mine which is being opened near Allenport by the same company. The latter is not sufficiently advanced for a general description.

Fawcett.—This mine has not been operated during the year.

Bellevue.—When last examined it was found in pretty fair condition.

Walton's Upper and Lower Mines.—The former mine was, on my last visit, in fair condition; but the latter in some places required improvement in ventilation.

Washington.—When examined last I found the ventilation in parts of it very unsatisfactory. Outlet measurement showed 16,540 cubic feet.

Umpire.—Examined December 10th; the part of the mine known as the "Point" was as, regards ventilation, not in a satisfactory condition, owing to the movement of air being caused by the natural forces, and the uncertainty of the direction in which the current was moving. In trying the instrument at the opening of an entry the currents reversed themselves two or three times in a few minutes. Seeing the condition of affairs, I requested that some artificial means be employed to produce and keep the air moving in one direction. I am informed that a "Fire-basket" will be put in for this purpose. The other part of the mine was in fair condition.

Climax.—When examined on December 7th, the mine was not in operation. In some parts of the mine the ventilation required improvement. An entry is being driven with which a shaft will connect, which, when completed, will be used as an air-way and an additional escape-way.

Knob.—Not in operation when inspected last. Condition of mine, fair. During the year a 16′ ventilating fan has been erected, and, if the air currents are properly distributed inside, there should be no cause for complaint in regard to the ventilation for some time to come.

Globe.—Inspected December 28th, and found in pretty fair condition.

California Nos. 1 and 2.—Those are new slope openings, located near the borough line of California, and one and a half miles above. The former has a dip of 1′ in 12′, and the latter 1′ in 3′. These mines are not advanced sufficiently for a general outline.

Abe Hays.—On my last examination of this mine the ventilation was not so good as on previous visits. They have since put in a shaft which will no doubt increase the air-current in the mine, owing to its being near the face of the workings.

Stony Hill and Cedar Hill.—These mines, as regards ventilation, were in an unsatisfactory condition on my last visits.

Old Eagle.—This mine was, when examined, December 2d, in a satisfactory condition. Extensive improvements have been made at this mine during the year, consisting of a Norwalk straight line air compressor, an air locomotive to be used in the mine to gather the coal to the double parting, from where it is taken to the tipple by a larger locomotive. A ventilating fan 20′ in diameter has been erected. They have also changed some thousand yards of "T" rail from 16 to 30 pounds per yard.

Cliff.—On my last visit to this mine it was found in fair condition.

H. D. O'Neil.—When examined last, the condition, as regards the ventilation, was fair with the exception of a few places which were driven ahead of the air current. The inlet air current measurement showed 14,575 cubic feet. In my annual report for the year 1890 I noted the proximity of the old "Love" mine to this mine, as well as the H. and R. mines No. 3; and being desirous of acquainting myself, if possible, in regard to the condition of the former mine, on October 10th, accompanied by Mr. H. Heath, mine-boss of H. D. O'Neil mines, I entered the old mine. When about 200 yards from the entrance we struck a butt-heading in which water was standing, with a dip toward the H. D. O'Neil mine at this point of 6″ to 20′. We could not get down this entry very far for black-damp, but it is evident from the dip that there is a great quantity of water in this mine. We found from marks on the coal that the water had been higher; this shows that one of the mines, or perhaps both, are taking water from the old mine. I have written both companies of our findings, although their plots show quite a distance to go to their lines yet, but I have suggested the use of "bore-holes" when driving towards the old mine.

Greenfield.—On my last visit to this mine the ventilation in parts of it required improvement. Drainage fair.

Woods Run.—The tipple has been torn down and the coal from this mine will hereafter be run over the Champion tipple.

Milesville.—When last inspected was in fair condition.

Ivil.—When examined, October 6th, it was in fair condition, except a few places which were driven ahead of the air current.

Clipper.—When examined last the ventilation and drainage in parts of the mines was very unsatisfactory. During the month of June, some rooms which were being worked off 10½ entry towards old 10, holed into the latter entry which from the falls gas showed itself. To remove this cause of danger brattice was used, but with little success as the falls were too close. Two entries were then started off the 10½ to intercept old 9 and 10 entries, which in due time were completed, and the gas removed through them. The gas from these entries came from a spar which they crossed, and as they have not worked for a number of years, the gas from it filled up the old workings for quite a distance.

Bunola.—They have extended their rope haulage about 500′ in the mine, the empty cars are drawn in by the dilly to the double parting where the full ones are fastened on the line and dropped by gravity, 20 full cars being the general trip used.

Tremont.—When inspected last there were only a few persons at work cutting drains and repairing. A wire rope haulage has been put in this mine during the year, the haulage route is 1,165 feet in length. The lines are of steel and ⅝″ in diameter, and the tail ½″. The engines 10″×12″, the drums are four and three and one-half respectively. On an average 25 cars are hauled in each trip.

Coal Bluff.—When examined last the ventilation in parts of the mine was very unsatisfactory, owing to the black-damp being given off from the falls of some rooms that had fallen in. Suggestions were made to remove the complaint.

Allequippa.—On my last examination of this mine the ventilation in parts of it was not satisfactory, but they have since put down a shaft and built a furnace at the bottom of it, which will with proper care produce all the ventilation required for the mine for a large territory.

Watson.—When examined, October 21st, this mine was in fair condition, except in a few places which were being driven ahead of the air current. Cubic feet of air passing through fan, 20,855.

The Vesta Coal Company is opening up a mine a short distance below Allenport, but it is not sufficiently advanced yet to give a general description.

Stockdale.—Was in operation 123 days during the year and gave employment to an average of 53 persons. On my last examination of this mine the ventilation was unsatisfactory on one entry, owing to some few rooms being worked ahead of the return.

MINES ON THE BELLEVERNON DIVISION OF THE P. & L. E. R. R.

Cleveland.—This is a new mine opened during the year. About 20 persons are employed at the present time driving entries, etc.

Molsberger.—On my last examination of this mine I found the ventilation and drainage very unsatisfactory. I notified the company in regard to the matter. The mine has since changed hands and only a few men are at work in it at the present time.

Stone and Mimmo.—This company is opening up a new mine a short distance above Shepplers station. The coal here lies high on the hills which necessitates the building of an incline to the railroad. They are at the present time driving entries, etc.

Manown.—This mine is located about three-fourths of a mile above Monongahela City. At the place where they broke ground for their opening they found that a slip had taken place at some previous time, completely covering up the face of the coal, which compelled them to start the opening below the coal. They drove 181′ and timbered the whole distance with 10×12 oak, 3′ from center to center, lagging the same with 3″ oak plank, they drove some 33′ farther and found the roof of sufficient strength to admit of the making of a cross-cut, which was driven 50′, which left a pillar of the above number of feet; from here an entry was started to be used as a main hauling road. A temporary tipple was put up and those entries were advanced as fast as possible.

The Robbstown turnpike which passes here compelled the main to make a raise toward the tipple of 2.85″ to the 100′ so as to cross the pike at grade. They then put up a permanent tipple, and the grade being against the load, they have put in a stationary engine and wire line to convey

the cars to the tipple. The mine is laid out on the double entry system with room and pillar work; ventilation is produced by a fan 16′ in diameter and driven by an engine coupled direct. On my last examination of this mine I found the ventilation satisfactory.

GREENE COUNTY MINES.

There are a few mines located near Waynesburg which employ from 2 to 9 persons. One of these mines has a shaft 61 feet in depth, size 6×11.

FATAL ACCIDENTS

———————— Zenerdelti was fatally injured January 22d, in Catsburg mine by a premature blast. Died February 4th.

The deceased had set fire to the squib of a shot which he had prepared, but as it did not fire the blast as soon as he thought it should have done, he advanced to the face of his work, and when immediately in front of the shot it was ignited, with the result as above stated.

John Crockett was almost instantly killed and Moses Bedoes seriously injured by a fall of slate in the Acme mine, February 13th. The deceased and Bedoes were working together, driving entry; they had fired a shot and had it nearly filled out, when Crockett remarked that they had better examine the slate which the deceased proceeded to do. Bedoes states that at this time his back was towards deceased, he heard him sounding the slate which was immediately followed by the falling of it which caught both men.

The deceased asked Bedoes two or three times if he was still held by the slate, the answer was yes. The driver who hauled the coal from this entry had been told to come back as soon as possible for the car which they had been loading, and at this time was coming up the entry, when Bedoes called him to get men to get them from under the slate. By this time Crockett was dead. He was twenty-six years of age and single.

Patrick Thompson was instantly killed by a fall of slate in Tremont mine, February 27th.

The deceased and William Watkins, Jr., worked together driving an entry; they had fired one shot and loaded it and the deceased started to bear in for the second one, when the slate fell with the above result. Watkins had just left the face or he would have been caught also. Deceased leaves a wife and one child.

William Hartrick was fatally injured by a fall of slate in the Albany mines, April 14th.

The deceased and another, were driving 15 entry and had, approximately, about 12 feet of slate on.

The reason there was such a large quantity of slate on was that previous to this they had been in the habit of shooting it down, not being able to remove it by wedging or pulling it with a pick.

On examination of the place of accident, it was found that the last shot in the coal had been drilled in the slate at the face and had shattered it somewhat, causing a break or fracture which extended to a slip on the left side of the entry. This slip continued in a zigzag form across the face and back down the entry for a distance of five feet.

From the evidence at the inquest, it appeared they had, when commencing on their last shot, some four hours previous to the accident, carefully examined the slate and considered it quite safe.

They had almost completed preparing this shot, and deceased was in the act of drilling, when the slate above suddenly gave way from the forementioned slips, crushing him in such a manner that he died in a little over an hour afterward.

Gorden Menser, a miner, was instantly killed by a fall of slate in Snow Hill mines, May 20th.

The deceased and Henry England worked together and had finished their room and were taking out the slate post from under, preparatory to abandoning it, when a piece of slate, 7 feet long 6 feet wide and 10 inches thick, fell on him. He leaves a wife and three children.

James Collins, trapper, aged 14 years, was instantly killed in Caledonia mines, June 9, by being caught between a part of a trip of full cars and a runaway car. It is supposed that the deceased jumped on the rear end of the trip (not knowing that the trip was broke) when the runaway car caught him between it and the other part of the trip, with the result as above stated.

Arwi Venrado, miner, was fatally injured June 10, in Ivil mines, by a fall of slate and coal Died June 12. I did not get to see the place where this accident occurred until after it was cleared up and all evidence was removed. The parties who adjusted the place did so without authority from the mine officials. The deceased was 35 years of age and single.

La Fayette Swager, age 22 years and single, was instantly killed by a fall of slate and coal in Greenfield mine, June 23. The deceased and Mr. Jeremiah Edwards were working together in room 19, entry 9. Just previous to the accident the above parties were bearing-in under a butt, and the latter started to bail water in the right of the room, when about three cars of coal fell and at the same time slate also fell, catching the deceased and resulting as above. They had a sprag under the coal but it did not seem to have much effect when the coal started.

Henry Abbot, a miner, age 55 years, was fatally injured in room 15, entry 10½ by a fall of coal and slate in Clipper mines. The deceased and a son worked together; on examination of the place where the accident occurred I found the face of the room badly squeezed, and to prevent an accident it required the utmost care on the part of the workmen. It seems that the deceased at the time of the accident was raising bottoms when the slate and coal fell catching Abbot and throwing him with such

violence against a car which was in the room that he only lived a few minutes after being injured. He leaves a wife and four children. This accident happened June 29.

Thomas Greeley, a driver, age 19 years and single, was instantly killed in Ivil mine, July 11, by being caught between the cars. The deceased had gathered part of his trip and in addition to which he wanted to hitch on a water wagon, and to do so, he hooked the tail chain to the water wagon to bring it up close enough to the other part of the trip to hitch on, and it is supposed that the velocity with which they were coming together caused the hitching to jolt out and his head was caught between the sideboards of the water car and the full car, as the body was found at right angles with the road and immediately under the side of the car.

Garevino Carchilli was instantly killed by a fall of slate in entry 2, room 99, Walton's upper road, on July 14. At the time of the accident, Carchilli was bearing-in when a piece of slate $5\frac{8}{10}$ feet long $2\frac{4}{10}$ wide and 13 inches thick fell upon him. In examining the room I found it troubled with a horse-back which made the slate somewhat dangerous. It seems that they had a slate post under the slate, but being in the road for bearing-in it was removed; the removing of this post no doubt caused the accident. The deceased was considered a practical miner, but it seems that he had overlooked this part of the room and did not think it dangerous. His age was 30 years. He leaves a wife and one child.

Edward Ward was fatally injured in Cincinnati mines, July 18, by being caught between a car and bottom. The deceased was riding out of the mine between the hitchings on a loaded trip, and it is supposed that the hitching came out letting him fall, when the rear car caught him between it and the rail. He died July 22: age 55 years.

On July 22, Thomas Warren, a boy about 13 years of age, while working with his father in Walton's Upper mine was instantly killed by a fall of slate in entry "C," room 8. The slate that fell on deceased was $5\frac{1}{2}$ feet long $3\frac{3}{10}$ feet wide and 9 inches thick. At the time of the accident the boy was knocking coal, and it is supposed that in doing this, the slate was loosened sufficiently to cause it to swing and discharge a post which was set under it. An inquest was held and a verdict of accidental death rendered.

On August 18, Domonic Domendio, a miner, employed in the Bunola mines, while taking down slate was struck by a piece of it on the right leg, injuring the member in such a manner that an amputation was performed, but the shock to the system at the time of the accident was too great, as he died some four weeks after being injured. He leaves a wife and three children.

On September 5th Mr. E. F. Miller, superintendent and mine-boss of the Nottingham mine, was fatally injured by the falling of the approach to the tipple which carried him down with the wreck. He lived about four hours after being hurt. In my investigation of this accident, I

found that the deceased and Mr. Charles Stahl, a miner, had been talking about the work in the tipple house, when Mr. Miller started toward the pit-mouth, followed by Stahl some ten yards behind. Mr. Stahl informs me that he felt the trestle move and he made for the tipple house, which he had just left, when something struck him and knocked him down; on recovering he looked around and Mr. Miller and part of the trestle had fallen. Stahl hurried down the tipple steps and found Miller partly covered by an empty car. Mathew Drobash, the blacksmith, was shoeing a mule in a shop nearby, and hearing a noise he looked out when he saw part of the trestle fall and Mr. Miller holding on to the "T" rail of the track which had been on that part of the trestle, but had not parted yet from the end next to the tipple; the grade being then to the dip, a car started down which in its descent broke the fastenings and loosened the deceased's hands from the rail causing him to fall, followed by the car. This is the car no doubt which Miller was under when found. Mr. Gibson, another workman, informs me that on the day before they were repairing the trestle with Mr. Miller in full charge of the repairs, and that it then was considered safe. At this time (the 4th) there were 18 full cars, three mules and three drivers on the part of the trestle which fell, while at the time of the accident there were only 6 full and 6 empty cars. It has been suggested that the reason it fell with the lighter weight, was that the trestle was injured somewhat by a storm which had passed up the valley the night before, which injury was not discovered by the deceased or his assistants. I am not informed whether they made an examination of the trestle on the day of the accident or not. He leaves a wife and four children to mourn his untimely death.

George A. Connor, a driver, aged 36 years, was instantly killed in Walton's Upper mine, September 16th, by a fall of roof. The deceased was going up room 5, entry 7, for a loaded car, and when about 7 yards from the car a portion of the roof fell on him. The room in which the accident occurred, was troubled with what is known in this vicinity as a *soot vein*. From the evidence produced at the inquest, it was learned that the room had partly fallen in and Joseph Barton, a miner, was hired to clean it up and put it in a safe condition, which he said he did to the best of his ability. Barton worked in the room at the time of the accident, and had passed and repassed the place where the fall occurred, but did not notice any danger from the roof. Inquest held and a verdict of accidental death rendered. Mr. Connor left a wife and five children.

Michael Schepeth, aged 23 years and single, was fatally injured in Albany mines on September 26th, by a fall of slate. He lived about an hour after being hurt. The deceased was in the act of setting a post under the slate when it fell on him. Inquest held and a verdict of accidental death rendered.

Crawford Johnson was instantly killed, November 4th, in Snowden

mine, by a premature blast. The deceased had tamped a hole for a blast, and having fired the squib retreated to a safe distance; but becoming impatient he started toward the shot and when nearly opposite it the blast fired, throwing pieces of coal against his head with the above result.

Buford District, aged 35 years and single, was fatally injured, November 5th, by falling slate in room 4, entry 2, Germania mines. The deceased worked with Sidney and Luther Smith, and at the time of the accident was throwing coal out from under the slate when it fell on him. On investigating this accident I found that a shot had been fired which knocked out a slate post that had been set, but it seems that no effort had been made to reset the post, and it was evident that if the slate was in such a condition before the shot was fired as to need a post under it, it was much more needed afterwards.

John Marchan, aged 34 and single, was instantly killed, on December 17th, by a fall of slate and coal, in Acme mines. The deceased and a miner named Pail worked together in room No. 2, entry No. 8, and at the time of the accident the former was "bearing-in" on a *butt*. The previous half shot in the middle had shattered the end of a butt somewhat and made it very dangerous which was not noticed by Marchan and Pail. From what I could learn Marchan heard the coal working and was in the act of leaving the "bearing-in" when the coal fell on him with the above result.

TABLE I.—*Showing Location of Collieries in the First Bituminous Mine District.*

NAME OF COLLIERY.	Name of Operator.	Location—County.	Name of Superintendent.	Postoffice Address.
Allen	Allen Coal Company	Washington	A. S. Braynell	Monarch.
Acme	Stockdale Coal Company	do.	do.	do.
Anderson	D. M. Anderson	do.	D. M. Anderson	Venetia.
Abe Hays	Abe Hays Coal Company	do.	T. S. Hutchinson	Monongahela City.
American	Vesta Coal Company	do.	R. B. Drum	California.
Amity	S. S. Crump & Son	Allegheny	S. S. Crump	Dravosburg.
Allequippa	Bailey, Wilson & Co.	do.	William W. Wilson	Camden.
Albany	Snowden & Hogg	Fayette	F. T. Hogg	Brownsville.
Blyth	Blyth Coal Company	Washington	D. S. Malloy	Speers.
Black Diamond	W. H. Brown Sons	do.	James Louttit	Monongahela City.
Beaumont	Eli Leonard	do.	A. G. Leonard	West Brownsville.
Buffalo	Covey Gas Coal Company	do.	Thomas Neel	Courtney.
Banner	J. M. Risher	do.	R. W. Smith	Shire Oaks.
Bellevue	Samuel Heylett	Allegheny	R. R. Gumbert	Belle Bridge.
Bunola	O'Neil & Peterson	do.	G. W. Peterson	Bunola.
Brown	W. H. Brown	do.	James Louttit	Monongahela City.
Cincinnati	Charles Jutte & Son	Washington	J. O. Phillis	Courtney.
Cliff	J. M. Risher	do.	R. W. Smith	Shire Oaks.
Catsburg	Catsburg Coal Company	do.	J. H. Jones	Monongahela City.
Clipper	Clipper Coal Company	do.	Robert Jack	Allenport.
Courtney	J. F. Kennedy	do.	W. A. Kennedy	Courtney.
Coal Bluff	Monongahela and P. C. G. Coal Company	do.	C. A. Menk	Coal Bluff.
Caledonia		do.		Elco.
Champion		do.		do.
Camden	George Lysle & Sons	Allegheny	B. M. Thomas	Camden.
Climax	Pittsburg and Bellevue Coal Company	Fayette	William M. Neel	California, Washington county.
Cedar Hill	Charles Bradford	do.	Charles Bradford	do. do.
Cleveland	Cleveland Coal Company	do.	D. A. Robinson	Bellevernon.
Eclipse	Osborne, Seager & Co.	Washington		
Eclipse	Eclipse Coal Company	do.	William Minford	Elco.
Ella	Ella Coal Company	Westmoreland	Alfred Speakman	Sunnyside.
Fidelity	Fidelity Coal Company	Washington	H. E. Kinlock	Roscoe.
Fayette City		Fayette	Samuel O'Neil	Fayette City.
Fulton	Jones Coal Company	Allegheny	Thomas Jones	Jones Station.
Faucetts	Thomas Faucetts & Son	Westmoreland	Thomas Faucett	Webster.
Garneld		Washington		
Greenfield	J. S. Neel	do.	J. S. Neel	Coal Centre.
Gastonville	Pittsburg and Chicago Gas Coal Company	do.	D. W. Van Eman	Gastonville.
Germania	Germania Gas Coal Company	do.	C. Fritchman	Finleyville.
Globe	Globe Coal Company	do.	R. L. Leadbeter	Coal Centre.
Horner & Roberts No. 3	Simpson, Horner & Co.	Allegheny		
Horner & Roberts No. 4	do. do.	do.		
H. D. O'Neil	H. D. O'Neil	do.	H. D. O'Neil	Elizabeth.
Hilldale	Hilldale Coal Company	Washington	Even Beedle	Jones Station, Allegheny county.
Hachett	T. Hachett Coal Company	do.	J. D. Boyle	Finleyville.
Ivill	James Jones	do.	James Jones	Monongahela City.
Jefferson	Foster & Clark	Allegheny	Thomas Foster	Coal Valley City.
Knob	Knob Coal Company	Washington	S. H. Pearsol	Brownsville, Fayette county.
Lovedale	John A. Wood & Son	Allegheny	George R. Gray	Elizabeth.
Little Redstone	Little Redstone Coal Company	Fayette	John T. James	Fayette City.

Little Alps	Alps Coal Company	do.	Joseph Underwood	Roscoe, Washington county.
Millesville	Robert Jenkins	Allegheny	Robert Jenkins	Sunny Side.
Manown	Youghiogheny Gas Coal Company	do.	John Simpson	Monongahela City.
Molsberger	G. Molsberger	Westmoreland	W. Molsberger	Webster.
Nottingham	Henry Florsheim	Washington	M. G. Gibson	Finleyville.
Old Eagle	W. H. Brown Sons	Allegheny	James Louttit	Monongahela City.
Rock Run	W. J. Snodgrassheim	do.	J. B. Sheridan	Camden.
Robbins	W. L. Robbins	do.	William Nimmo	McKeesport.
Snowden	Pittsburg and Chicago Gas Coal Company	do.	D. W. Van Eman	Finleyville, Washington county.
Stone	Stone Coal Company	do.	George W. Stone	McKeesport.
Stone and Nimmo	Stone & Nimmo	Westmoreland	William Nimmo	do.
Stony Hill	John N. Dixon	Fayette	John N. Dixon	California, Washington county.
Snow Hill	Alps Coal Company	do.	Joseph Underwood	Roscoe, Washington county.
Stockdale	John Crombie	Washington	John Crombie	Webster, Westmoreland county.
Tremont	John A. Wood & Son	Fayette	S. B. Graham	Bellevernon.
Umpire	C. L. Snowden & Co.	do.	John Simpson	Brownsville.
Watson	Watson Coal Company	Allegheny	Joseph L. Watson	Coal Bluff, Washington county.
Walton's Upper Mine	Joseph Walton & Co.	do.	John W. Rihe	West Elizabeth.
Walton's Lower Mine	do. do.	do.	do.	do.
Washington	Briggs & Flint	Fayette	T. S. Briggs	Monarch, Washington county.

TABLE II.—*Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the First Bituminous Mining District, for the year ending December 31, 1891.*

NAMES OF COLLIERIES.	Location—County.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Allen	Washington	45,389		45,389	214	51		1	420		4		
Acme	do	60,144		60,144	220	80	2	2	780				
Anderson	do	20,826		20,826	160	81							
Abe Hays	do	32,570		30,370	171	75							
American	do	24,642		24,642	185	101							
Amity	Allegheny	102,880		87,580	220	246		1			18		
Allequippa	do	108,998		108,998	163	219		2			10		
Albany	Fayette	134,950		134,950	257	155	2	1	675		11		
Blyth	Washington	50,337		50,337	166	85		1	84		4		
Black Diamond	do	72,369		72,369	164	160		2	500		8		
Beaumont	do	25,550	1,000	25,550	200	42					3		6
Buffalo	do	42,918		42,918	158	189					6		
Banner	do	48,131		57,757	158	165		1	250		9		
Bellevue	Allegheny	32,013		32,013	102	112		1			10		
Bunola	do	75,537		75,537	200	128	1	4	380		9		
Brown	do	380		380		5							
Cincinnati	Washington	54,692		57,692	160	147	1		600	1	11		
Clift	do	47,250		57,700	207	105			150	1	5		
Catsburg	do	122,277		122,277	278	208	1	3	400	2	10		
Clipper	do	80,537		80,537		92	1	1		1	9		
Courtney	do	31,450		31,450	120	80				1	5		
Coal Bluff	do	80,182		80,182	205	164		1	450		8		
Caledonia	do	100,000		100,000	200	117	1	2	500		6		
Champion	do	90,000		90,000	200	108			500		6		
Camden	Allegheny	104,000		104,000		204		1		4	14		
Climax	Fayette	36,351		36,351		89				2	4		
Cedar Hill	do	32,758		32,758		71					4		
Cleveland	do	308		308		26					2		
California	Washington	644		644		19		1			2		
Eclipse (R. R.)	do	57,529		57,529	250	81		1	100	1	2		

Eclipse (River)	Washington	3,000		3,000	60	34					4			
Ella	Westmoreland	3,080		3,080	60	52		2			4			
Fidelity	Washington	51,031		51,031	207½	60					4			
Fayette City	Fayette	173,646		173,646	227	207		2		2	10			
Fulton	Allegheny	14,737		14,737	50	122					6			
Gastonville	Washington	77,910		77,910	166	158			146		8			
Greenfield	do.	96,648		96,648	207	132	1	1	685	1	8			
Germania	do.	41,977		41,977	162	152	1	2		1	5			
Globe	do.	70,563		70,563	203	140			600	2	8			
Horner & Roberts No. 3	Allegheny	*70,000		70,000		150		1			8		1	
Horner & Roberts No. 4	do.	*500		500		9		1		1	2			
H. D. O'Neil	do.	71,867		71,867	201	131				1	5			
Hilldale	Washington	130,000		130,000		144		1		1	8			
Hackett	do.	20,100		20,100		87		2			3			
Ivill	do.	113,602		113,602	257	198	2	3	400	4	7			
Jefferson	Allegheny	84,077		84,077	156	152		1		2	8			
Knob	Washington	66,219		66,219	220	132		3	400	2	12			
Lovedale	Allegheny	33,585		33,210	162	114		1	150	3	5			
Little Redstone	Fayette	45,458		45,458	153	114		7		1	10			
Little Alps	do.	6,676		6,676	65	47		2	100		2			
Milesville	Allegheny	41,853		41,853	203	126			150	1	2			
Manown	do.	13,568		13,568	294	97		1		2	2			
Molsberger	Westmoreland	*30,000		30,000		60				1	4			
Nottingham	Washington	55,878		55,878	254	145	1				6			
Old Eagle	Allegheny	58,443		58,443	171	207		2	275	6	12			
Rock Run	do.	16,749		16,749	115	56					5			
Robbins	do.	76		76										
Stone	do.	67,969		76,969	191	148		1		1	8		1	
Snowden	do.	61,830		67,830	148	128	1	2	98	2	10			
Stony Hill	Fayette	70,000		70,000		114		1		1	6			
Snow Hill	"	77,430		77,430	223	154	1	2	380	2	6			
Stockdale	Washington	15,215		15,215	123	53			76	1	4			
Tremont	Fayette	69,862		69,862	230	144	1	4		1	6			
Umpire	do.	77,520		77,520	226	157			500	2	10			14
Union Valley	Washington	10,284		10,284										
Watson	Allegheny	82,688		82,688	224	195			64	1	6			
Walton Upper Mine	do.	190,034		190,034	175	312	3			2	20		1	
Walton Lower Mine	do.	65,668		65,668	62	253				2	18		1	
Washington	Fayette	50,500		50,500	196	89			200	2	8			
Total		3,943,265	1,000	3,951,266	8,850	8,249	20	68	8,962	75	468	5	20	

* Estimated.

TABLE III.—*Showing the number of each class of Employes at each Colliery in the First Bituminous Mine District, during the year 1891.*

NAMES OF COLLIERIES.	Location—County.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.					Grand totals inside and outside.
		Inside foreman or mine boss.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Doorboys and helpers.	Total inside.	Blacksmiths and carpenters.	Engineers and firemen.	All company men.	Superintendent, book-keepers and clerks.	Total inside.	
Allen	Washington	1	35	4	1	4	. . .	45	1	. . .	3	2	6	51
Acme	do.	1	65	8	1	4	. . .	73	1	. . .	4	. . .	5	80
Anderson	do.	1	60	10	. . .	4	1	75	1	1	4	1	7	82
Abe Hays	do.	1	55	5	1	7	2	71	. . .	. . .	3	1	4	75
American	do.	1	75	10	. . .	7	1	94	. . .	1	4	2	7	101
Amity	Allegheny	1	190	15	5	15	2	228	3	. . .	13	1	18	246
Allequippa	do.	1	155	20	4	12	3	195	4	2	17	1	24	219
Albany	Fayette	1	130	14	3	12	2	162	2	1	9	1	13	175
Blyth	Washington	1	65	4	3	4	1	78	1	. . .	4	2	7	85
Black Diamond	do.	1	120	8	5	9	. . .	143	2	1	11	3	17	160
Beaumont	do.	1	28	5	. . .	2	. . .	36	. . .	1	4	1	6	42
Buffalo	do.	1	150	15	1	6	5	178	2	1	6	2	11	189
Banner	do.	1	128	6	2	8	1	146	2	2	10	5	19	165
Bamola	Allegheny	1	90	13	1	8	2	115	2	1	8	2	13	128
Bellevue	do.	1	74	12	3	10	. . .	100	1	1	9	1	12	112
Brown	do.	. . .	2	. . .	1	. . .	. . .	3	. . .	. . .	1	1	2	5
Cincinnati	Washington	1	110	12	. . .	10	. . .	133	1	2	10	1	14	147
Cliff	do.	1	80	3	1	7	. . .	92	2	2	6	3	13	105
Catsburg	do.	1	175	6	2	8	1	193	3	1	8	3	15	208
Clipper	do.	1	68	6	2	7	1	85	1	. . .	4	2	7	92
Courtney	do.	1	60	7	1	4	1	74	1	1	3	1	6	80
Coal Bluff	do.	1	140	6	2	4	3	156	2	. . .	5	1	8	164
Champion	do.	1	80	8	2	6	2	99	. . .	. . .	5	4	9	108
Caledonia	do.	1	85	10	2	6	2	106	. . .	. . .	6	5	11	117
Camden	Allegheny	1	150	. . .	4	13	4	172	1	1	15	15	32	204
Climax	Fayette	1	90	. . .	1	4	. . .	96	. . .	. . .	3	. . .	3	99
Cedar Hill	do.	1	55	3	2	4	. . .	65	1	. . .	2	2	6	71
Cleveland	do.	1	18	. . .	1	2	. . .	22	1	. . .	2	1	4	26

California	Washington	1	8	. . .	. . .	1	. . .	10	3	2	3	1	9	19
Eclipse (R. R.)	do.	1	60	4	3	4	4	76	1	. . .	3	1	5	81
Eclipse (River)	do.	1	24	. . .	1	3	1	30	1	. . .	2	1	4	34
Ella	Westmoreland	1	37	. . .	. . .	4	. . .	42	1	. . .	7	2	10	52
Fidelity	Washington	1	44	5	1	4	. . .	55	1	. . .	3	1	5	60
Fayette City	Fayette	1	170	10	1	10	1	193	2	2	9	1	14	207
Fulton	Allegheny	1	90	10	. . .	6	1	108	1	. . .	12	1	14	122
Greenfield	Washington	1	100	6	1	9	4	121	1	1	7	2	11	132
Gastonville	do.	1	122	17	1	6	3	150	2	. . .	5	1	8	158
Germania	do.	1	125	7	1	5	1	140	1	. . .	9	2	12	152
Globe	do.	1	112	3	3	7	3	129	1	1	7	2	11	140
Horner & Roberts No. 3	Allegheny	1	125	4	3	7	3	140	. . .	1	7	2	10	150
Horner & Roberts No. 4	do.	. . .	9	. . .	. . .	. . .	. . .	9	. . .	. . .	. . .	. . .	. . .	9
H. D. O'Neil	do.	1	106	6	1	5	2	121	1	1	8	. . .	10	131
Hilldale	Washington	1	100	10	15	7	1	134	1	1	7	1	10	144
Hackett	do.	1	75	4	. . .	2	1	83	1	. . .	2	1	4	87
Ivil	do.	1	160	6	2	7	1	177	2	4	8	3	17	194
Jefferson	Allegheny	1	114	10	1	10	2	138	1	1	10	2	14	152
Knob	Washington	1	100	. . .	2	12	2	117	2	2	8	3	15	132
Lovedale	Allegheny	1	85	5	3	5	1	100	1	2	9	2	14	114
Little Redstone	Fayette	1	90	6	1	8	. . .	106	1	. . .	5	2	8	114
Little Alps	do.	1	37	3	. . .	2	. . .	43	1	. . .	2	1	4	47
Miesville	Allegheny	1	100	6	1	8	1	117	1	1	6	1	9	126
Manown	do.	1	80	2	2	2	2	89	1	1	5	1	8	97
Molsberger	Westmoreland	1	75	5	1	5	. . .	87	. . .	. . .	3	2	5	92
Nottingham	Washington	1	108	20	2	6	1	138	1	. . .	4	2	7	145
Old Eagle	Allegheny	1	160	8	2	12	4	187	3	5	10	2	20	207
Rock Run	do.	1	41	2	1	4	. . .	49	1	. . .	5	1	7	56
Robbins	do.	1	15	. . .	. . .	1	. . .	17	. . .	. . .	3	. . .	3	20
Snowden	do.	1	92	14	2	7	3	119	2	1	5	1	9	128
Stone	do.	1	108	13	8	6	. . .	136	1	1	9	1	12	148
Stony Hill	Fayette	1	90	6	2	5	2	106	1	1	5	1	8	114
Snow Hill	do.	1	120	15	2	7	1	146	1	1	4	2	8	154
Stockdale	Washington	1	40	3	. . .	4	. . .	48	. . .	. . .	4	1	5	53
Tremont	Fayette	1	115	6	1	6	2	131	1	1	10	1	13	144
Umpire	do.	1	105	7	3	9	2	127	1	2	6	1	10	137
Watson	Allegheny	1	175	. . .	1	5	4	186	1	1	5	2	9	195
Walton's Upper mine	do.	1	250	10	5	19	. . .	285	5	2	18	2	27	312
Walton's Lower mine	do.	1	200	10	3	15	1	230	3	2	16	2	23	253
Washington	Fayette	1	65	5	6	7	. . .	84	1	2	. . .	2	5	89
Total		66	6,364	452	133	437	89	7,531	91	78	431	118	718	8,249

TABLE IV—*List of Fatal Accidents occurring in and about the Mines of the First Bituminous Mine District for the year ending December 31, 1891.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	Number of orphans.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
Jan. 22,	——— Yenerdelti,	Miner,	. . .	S.	. . .	Catsburg,	Washington,	Fatally injured by premature blast; died February 4.
Feb. 13,	John Crachet,	do.	26	S.	. . .	Acme,	do.	Almost instantly killed by a fall of slate.
27,	Patrick Thompson,	do.	31	M.	1	Tremont,	Fayette,	Instantly killed by a fall of slate.
April 14,	William Hartrick,	do.	. . .	. . .	. . .	Albany,	do.	Fatally injured by falling slate; lived some four hours after being hurt.
May 20,	Gardner Menser,	do.	30	S.	. . .	Snow Hill,	do.	Instantly killed by falling slate.
June 9,	James Collins,	Trapper,	14	. .	. . .	Caledonia,	Washington,	Instantly killed by cars.
10,	Arni Venrado,	Miner,	35	S.	. . .	Ivil,	do.	Fatally injured by falling coal and slate; died on the 12th.
23,	La Fayette Swager,	do.	22	S.	. . .	Greenfield,	do.	Instantly killed by falling coal and slate.
29,	Henry Abbot,	do.	55	M.	4	Clipper,	do.	Fatally injured by falling coal and slate.
July 11,	Thomas Greely,	Driver,	19	S.	. . .	Ivil,	do.	Instantly killed by cars.
14,	Garevina Carchille,	Miner,	30	M.	1	Waltons, Upper,	Allegheny,	Instantly killed by falling slate.
18,	Edward Ward,	do.	55	S.	. . .	Cincinnati,	Washington,	Fatally injured by coal car; died on the 22d.
22,	Thomas Warren,	do.	15	. . .	. . .	Waltons, Upper,	Allegheny,	Instantly killed by a fall of slate.
Aug. 18,	Domonic Domendi,	do.	. . .	M.	3	Bunola,	do.	Injured by a fall of slate; lived four hours after being hurt.
Sept. 5,	E. F. Miller,	Mine boss,	40	M.	4	Nottingham,	Washington,	Fatally injured by trestle of tipple falling.
16,	George A. Conner,	Driver,	36	M.	5	Waltom, Upper,	Allegheny,	Instantly killed by a fall of roof.
26,	Michael Scheteth,	Miner,	23	S.	. . .	Albany,	Fayette,	Fatally injured by falling slate.
Nov. 4,	Crawford Johnson,	do.	. . .	S.	. . .	Snowden,	Allegheny,	Instantly killed by a fall of slate.
5,	Buford District,	do.	25	S.	. . .	Germania,	Washington,	Fatally injured by falling slate.
Dec. 17,	John Marchan,	do.	34	S.	. . .	Acme,	do.	Instantly killed by a fall of coal and slate.

TABLE V—*List of Non-Fatal Accidents occurring in and about the Mines of the First Bituminous Mine District, for the year ending December 31, 1891.*

Date of accident.	Name of Person.	Occupation.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
Jan. 18.	Thomas Hughes.	Miner.	Allen.	Washington.	Head injured by a fall of slate.
	David Nichols.	do.	Blyth.	do.	Hurt slightly by a fall of roof.
March 20.	William Vincent.	do.	Stone.	Allegheny.	Leg broken by a fall of slate.
21.	Edward Pigford.	do.	Hilldale.	Washington.	Leg broken by a fall of slate.
April 1.	Frank Masulia.	do.	Ivil.	do.	Seriously injured by a fall of coal and slate.
1.	James Larmer.	do.	Fayette City.	Fayette.	Leg broken and back injured by falling slate.
12.	William McGregor.	Driver.	Camden.	Allegheny.	Leg broken by "tail" chain.
13.	Glenamile Descamps.	Miner.	Old Eagle.	do.	Injured by a fall of slate.
15.	William.	do.	Allequippa.	do.	Back injured by a fall of "horse back."
15.	Martin Greeley.	do.	H. & R. No. 3.	do.	Hip dislocated by a fall of slate.
18.	Frank Seroggs.	do.	Old Eagle.	do.	Injured by cars.
22.	Arthur Smith.	do.	Bellevue.	do.	Injured by a fall of slate.
29.	Robert Kennedy.	do.	Clipper.	Washington.	Injured on foot by falling coal.
May 1.	Joseph Cocain.	do.	Catsburg.	do.	Two toes mashed by a fall of slate.
1.	Tosi Carlo.	do.	do.	do.	Arm broken by falling slate.
7.	Charles Wheeler.	do.	Albany.	Fayette.	Hurt by a premature blast.
9.	William Dryer.	do.	Allequippa.	Allegheny.	Foot injured by falling slate.
18.	Manna Stafli.	do.	Bunola.	do.	Leg broken by a fall of slate.
24.	James Jones.	do.	Little Redstone.	Fayette.	Back and leg injured by a fall of slate.
27.	Robert Watson.	do.	Snow Hill.	do.	Head injured by a fall of slate.
June 25.	Budoni Clementi.	do.	Coal Bluff.	Washington.	Hip injured by a fall of slate.
26.	Thos. Heatheston.	do.	Little Redstone.	Fayette.	Injured by falling slate.
July 3.	Thomas Cocain.	Driver.	do. do.	do.	Back injured by cars.
16.	William Crombie.	do.	do. do.	do.	Foot injured by cars.
21.	John Cunningham.	do.	do. do.	do.	Injured by being caught between roof and car.
30.	David Mathews.	Miner.	do. do.	do.	Injured by falling slate.
Aug. 7.	Frank Bangane.	do.	Black Diamond.	Washington.	Ear taken off by a fall of slate.
10.	John King.	do.	Little Redstone.	Fayette.	Lower part of body injured by a fall of slate.
14.	Matthew Clone.	do.	Jefferson.	Allegheny.	Arm broken and a rib fractured by a fall of slate.
14.	William Blair.	do.	Caledonia.	Washington.	Seriously injured by a fall of slate.
14.	David Moxan.	do.	do.	do.	Injured by a fall of slate.
18.	Charles Wateral.	do.	Knob.	do.	Ankle broken by car.
Sept. 4.	James Drenon.	do.	Fayatte City.	Fayette.	Knee hurt by a fall of slate.
6.	Martin Rutter.	do.	do.	do.	Foot injured by car.
10	John Huffman.	do.	Stony Hill.	do.	Injured by being caught between car and rib.
26.	Everett Sadler.	Day hand.	Manawn.	Allegheny.	Seriously injured by falling off tipple.
Oct. 7.	Louis Killback.	Miner.	Knob.	Washington.	Slightly injured by a premature blast.
Nov. 1.	Chas. Eaglan.	do.	California.	do.	Injured by a fall of slate.
4.	Martin Leech.	do.	Acme.	do.	Leg broken by falling slate.

TABLE V—*Continued.*

Date of accident.	NAME OF PERSON.	Occupation.	Name of Colliery.	Location—County.	Name and Cause of Accident.
Nov. 11.	Mantin Canfield,	Miner.	Bunola,	Allegheny,	Seriously injured by a fall of coal slate and "horse-back."
13.	Branci Raffaldo,	do.	do.	do.	Leg broken by a fall of slate.
24.	Conrad Bricker,	do.	Ella,	Westmoreland,	Foot injured by car.
24.	Isaac Waltem,	do.	do.	do.	Seriously injured by being caught between cars.
Dec. 1.	Charles Speidle,	do.	Tremont,	Fayette.	
2.	Joseph Arkwright,	Day hand.	Snow Hill,	do.	Leg broken by dilly trip.
7.	William Ray,	Miner.	Ivil,	Washington,	Injured by dilly trip.
11.	James Lemmel,	do.	Amity,	Allegheny,	Leg broken by cars.
16.	John Butterworth,	do.	Bunola,	do.	Leg broken in two places by falling slate.
21.	Elias Pickevance,	do.	Black Diamond,	Washington,	Burned by fire-damp.
24.	David Noon,	do.	H. & R.,	Allegheny,	Leg broken by a fall of slate.
28.	Thomas Morrison,	do.	Little Alps,	Fayette,	Leg broken by a fall of coal.

SECOND BITUMINOUS DISTRICT.

(ALLEGHENY AND WESTMORELAND COUNTIES.)

HON. THOMAS J. STEWART, *Secretary of Internal Affairs:*

SIR: In compliance with the tenth section of the act of assembly, approved June 30, A. D. 1885, I have the honor of submitting my annual report as Inspector of mines for the Second bituminous district for the year ending December 31, 1891.

There are now 82 mines in the district, which, when in operation, come within the provisions of the law. It affords me great pleasure to state that the mines are still improving. Ten air shafts were sunk, five fans erected, and seven furnaces built with all the improved facilities for ventilation. I still urge upon those having charge of the mines the necessity of systematically dividing the air-currents and circulating the same to the face of the working places. The velocity of the air current should never be less than three feet per second for the reason that it has no propelling force to carry off the powder smoke, and other gases as they are generated. Dividing 20,000 cubic feet into more than two currents is not wise, as it gets too sluggish. The majority of the mines in this district have from 150 to 600 cubic feet of air in circulation per minute for each person employed in the mines; anything less would not do to keep the mines in a healthy condition. The parties who appeared before the committee of the Senate on mines and mining, showed very little knowledge of mines when they stated that 100 cubic feet of air per minute was sufficient to keep the mines in a healthy condition. A month of my time was spent on the commission to revise the bituminous mining act. I consider that we formulated a very good bill, notwithstanding the clashing of interests between the miners and operators on the commission. Our work was completed, and the bill sent to the legislature for its action; and I was somewhat surprised when I heard the howl from the Senators against the bill who a few days before were crying for protection for the miners. The Senators are responsible for the death of the bill, and now they are coming back to their constituents informing them of the grand work which was done for them at Harrisburg the last session of the Senate. O thou hypocrite! keep silent while thy unfortunate brother is crying at thy feet for better protection. Although the revised bill was killed by our Senators, it will only slumber in the

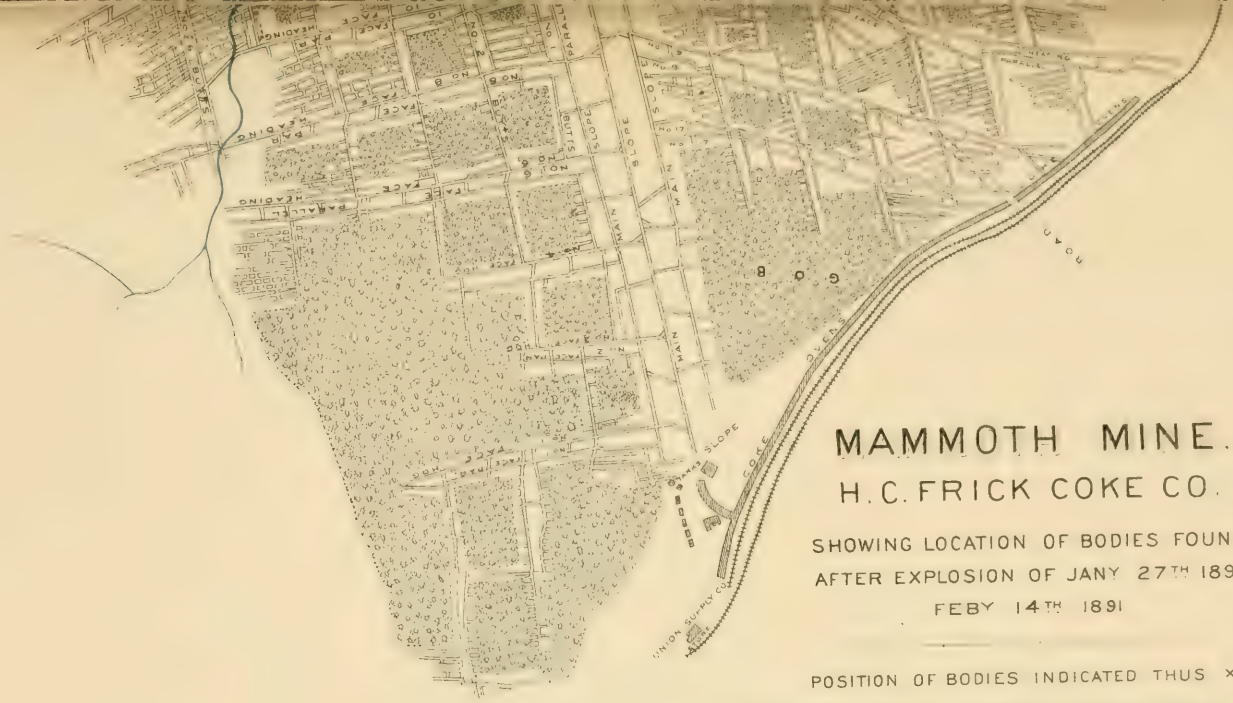
grave a very short time. Already many of its provisions have been adopted by the largest coke company in the district. This shows plainly that some of the coal companies are far in advance of our law makers. I regret very much to have to report so large a number of persons killed. One hundred and nine perished in an explosion at the Mammoth mines; and from all the evidence that was produced, no one seems to be accountable for their deaths. A majority of the other twenty-five persons killed were killed by recklessness or the want of forethought on their own part. I have always made an effort to enforce the provisions of the law, and in this effort have met with strong opposition, as the following resolution will clearly show: "At a meeting of the Yough slope miners the following resolution was adopted: *Resolved*, That we, the miners of the Yough slope, having worked under Samuel Woods as fire-boss for nineteen months, do hereby testify to his faithfulness, and express our confidence in his efficiency, and extend to him our sympathy in his being caught up in matters of small importance.

(Signed) "AMBROSE WILLIAM,
"JOHN WEBSTER."

This man Woods was fire-boss at the Yough slope, and on the 23d day of February, 1891, he claimed to have examined all the working places and he reported them safe. On my visit later on in the day I discovered that he had not examined one-half of the mine where the miners were working, and had wilfully sent the miners in like so many cattle to the slaughter house, and this is what the miners consider of small importance. This mine generates far more fire-damp than the Mammoth mines ever did. If our miners will not submit to a more rigid discipline, and report all violations of the law of which they have any knowledge, I fear for their future safety, as the dangers are increasing from fire-damp every year as we penetrate farther into the bowels of the earth.

MAMMOTH MINES.

On the 27th day of January, 1891, an explosion occurred in this mine by which one hundred and nine persons were killed, being by far the most disastrous accident that ever occurred in this state, and in view of this fact I think it would be well to give a brief history of the mines. They are located on the Sewickley Branch of the South West Pennsylvania railroad, in Mount Pleasant township, Westmoreland county. They were opened by Colonel J. W. Moore in 1885, and operated by him until August 31, 1889, at which time they were purchased and operated by H. C. Frick until October of the same year, when they were transferred to the H. C. Frick Coke Company, which was operating them at the time of the explosion. During 1885 and 1886 the mine was ventilated by the exhaust steam from the pump, and was defective until a connection was made with the shaft which was commenced in the spring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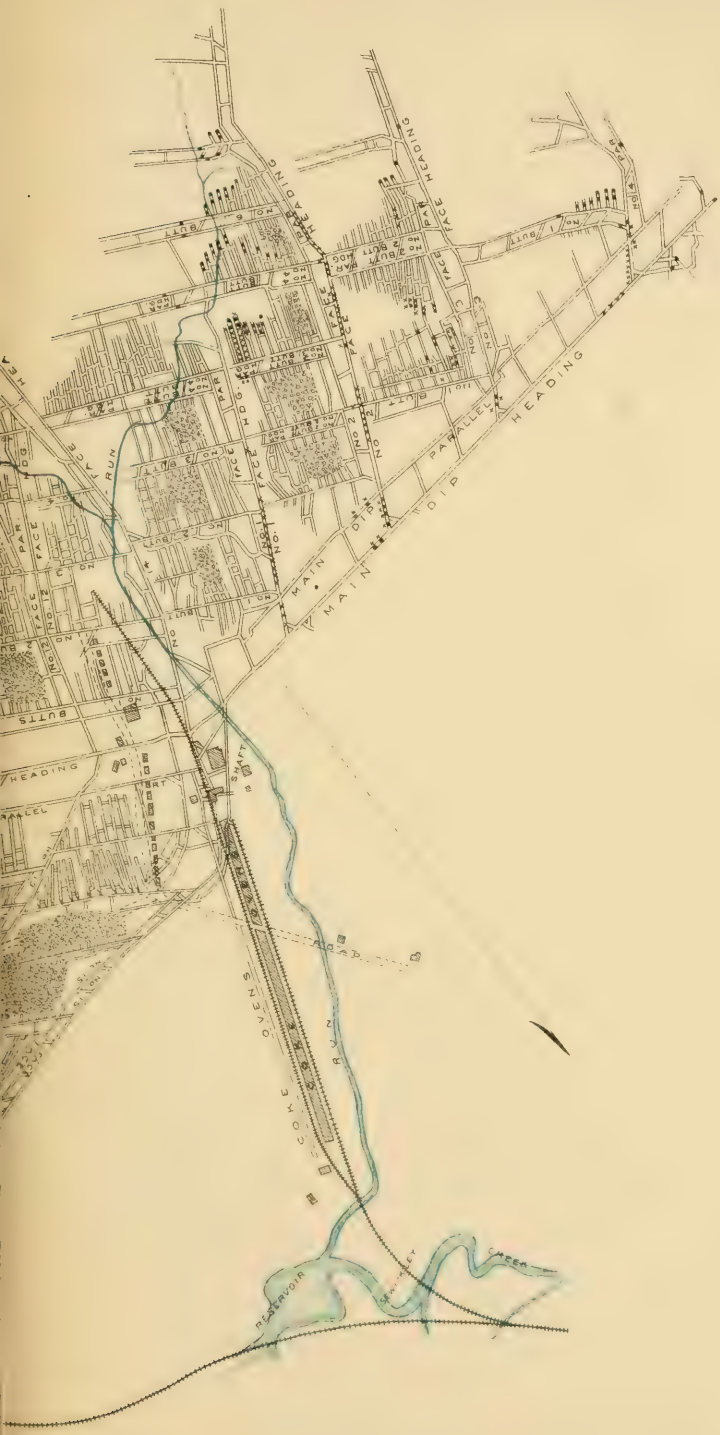
MAIN DIP HEADING
PARALLEL
FACE HEADING
BUTTS
ROAD
RIVER
RESERVOIR
CREEK

of 1886, and located north 67° 25″ west 3,050 feet from the mouth of the slope; I made two visits to this mine in 1885, and measured an average of 9,240 cubic feet of air per minute going in at the inlet. An average of 57 persons were employed in the mine during this year. The shaft is 100 feet deep and divided into three compartments, two for cageways, and the other for pumping and ventilation. After the heading was driven a short distance from the bottom of the shaft a feeder of gas (fire-damp) was struck which came from a rent in the rock and roof coal. The shaft bottom at this time was ventilated by a small hand-fan, and the air was carried in a box 12 inches square, which was broken by a fall allowing the gas to accumulate, and it was fired, slightly burning one man. In October, 1886, connection was made with the slope and the quantity of air increased to 20,720 cubic feet per minute. An average of one hundred and seventy-five persons were employed in the mine, which I visited five times during the year. In 1887 a fan 25 feet in diameter was erected which was driven by an engine 20″×36″. I made four visits to the mine in that year and found it in good condition and clear of fire-damp except a small feeder on the slope a short distance from the shaft. During one of my visits I measured 77,400 cubic feet per minute going in at the inlet, with the fan making twenty-four revolutions per minute, which quantity could be doubled by increasing the speed of the fan. In 1888 a man was slightly burned by an explosion of fire-damp, which came from a fall in the roof in No. 6 flat in the slope. This heading had been driven some distance ahead of the air current. The heading had been examined by the fire-boss some time before the miner went to work, and was found clear of gas. I made four visits to the mine in that year, and found it in good condition, with an average of 47,327 cubic feet of air per minute in circulation. An average of two hundred and fifty persons were employed in these mines during the year. In 1889 I made an effort to have the steam line removed from the dip, for the reason that it interfered with the ventilation, and heated a portion of the dip so as to make it uncomfortable to work in; I made four visits to the mines during the year, found the drainage somewhat neglected. I found no fire-damp, neither was any reported by the fire-bosses of whom I inquired at each visit. The average air measurement in that year, was 48,640 cubic feet per minute. In the beginning of 1890 an air compresser was substituted for the steam line which had been a source of annoyance to me since 1885. Other improvements were also made during the year which were conducive to the sanitary condition of the mine, viz., a new pump 12″×24″×48″ was placed in the mines. The roads which were under water in some parts of the mine were raised and corduroyed, and a parallel heading was mapped off to the right of the main slope, to be used as an intake air-way, so as to take the main inlet of air off the main hauling slope, this heading was started but a short time before the explosion. During that year I made five visits to

the mines, and measured at the inlet an average of 52,645 cubic feet of air per minute going in, 23,760 going into the dip workings and 28,885 going on the slope side; I saw no fire-damp, neither was any reported by the fire-bosses of whom I made inquiry at each visit. January 16, 1891 I visited the mine for the purpose of investigating an accident to a miner, which having done, I proceeded to examine the mine. The measurement of air going into the dip showed 23,940 cubic feet per minute, at this time one hundred persons were working in the dip, thus giving each person 239 cubic feet or 139 cubic feet more than required by law. I also measured on No. 2 flat showing 10,640 cubic feet, No. 3 flat showing 10,290 cubic feet, No. 4 flat was also measured but I forgot to make a record, but it was all right, and upon coming out I reported the mine in fair condition; I saw no fire-damp, neither was any reported by the fire-bosses of whom I made inquiry. Mr. Eaton, the mine-boss, measured the air during the fourth week of the month with the following results: Inlet to the dip 27,090 cubic feet per minute, 248 cubic feet for each person working in the dip. Measurements in Nos. 1, 2, 3 and 4 flats showed as follows: No. 1, 19,600, No. 2, 19,040, No. 3, 18,760 and No. 4, 16,320 cubic feet of air per minute. The inlet to the dip except what leaked through the doors of Nos. 1, 2 and 3 flats went down to No. 4 flat where eighteen persons were working, it passed on to No. 3 flat, and was joined here by 2,440 feet of fresh air that leaked through the door on the mouth of No. 3 flat. This quantity, except what leaked through the doors on the mouth of each butt heading, passed too near the face. The air after going to the face of No. 3 flat returned on the parallel, and part went up Nos. 1, 2 and 3 butt headings into No. 2 flat, here it was joined by 280 cubic feet which leaked through the door at the mouth of No. 2 flat, and so on to the slope workings.

The system of ventilation in this mine is the same as is in practice in other mines in the bituminous coal regions, that of dividing the same around the mine, and from the foregoing it can be seen that the mine was fairly ventilated and that the quantity of air was largely in excess of what the law requires.

On Monday, January 26, James Eaton, mine-boss, and William Snaith, fire-boss, went over the fall with naked lights where the gas generated afterwards.

On Tuesday morning William Snaith, fire-boss, made an examination of the mine before any one was permitted to enter and made the following report:

This is to certify that I have this day, January 27, 1891, examined the working places in the Mammoth and found the same to be in a fit condition for miners and other persons employed therein.

(Signed) WILLIAM SNAITH,
Fire-boss.

That William Snaith, the fire-boss, after making his report at once returned into the mine and to the farthest point in the dip, is evidence that he believed the mine perfectly safe and in that, he is sustained by the testimony of the persons who had charge of the mines and from my own knowledge of the absence of gas during my inspection of the mine. James Eaton, mine-boss, had been in charge of the mine for one year and had not seen fire-damp and none was ever reported to him by the fire-bosses or any one else. Peter Lowther was fire-boss in the mine for more than three years and never detected fire-damp. John Eaton examined the mine on the mornings of the 8th, 9th and 10th of December, 1891, examining places that were not working, as well as those that were; spending four hours in making the examination each morning, but found no indication of fire-damp. Richard Davis was engaged in making a complete survey of the mine in January, February, March and April, 1891; most of the work was done at night, but saw no indication of fire-damp. J. J. Davis, ex-mine inspector, now private inspector for the H. C. Frick Coke Company, made an examination of the mine in October, 1890, and reported the ventilation good and no indication of fire-damp. Fred. C. Keighley, superintendent, had been in charge of the works for three months nearly, and says the mine was in fair condition and that he almost daily questioned the fire-bosses, who were all practical miners, if they had discovered indications of fire-damp and he always received a negative reply.

J H. Paddock, chief mining engineer of the company, made monthly visits to the mine and always made inquiries of the mine-boss and fire-bosses if they had discovered indications of fire-damp, but always received a negative reply. He says the ventilation was fairly good.

The testimony of these men was taken before the Mammoth mine commission and at the coroner's inquest, and shows clearly that the mine was in good condition and free from fire-damp on the day before the explosion.

The question that naturally presents itself is, can fire-damp accumulate in so short a time and in such quantities as to cause a disastrous explosion, such as occurred at the Mammoth mines? I answer yes. Many instances to substantiate this are on record, but I will cite one only. The explosion which occurred in 1866 at the Oaks colliery in Yorkshire, England, where 362 persons were killed, was caused by a sudden outflow of gas. The same thing may happen here, and when we take into consideration the fact that in no place in the known world has there been such a reservoir of natural gas discovered as in Westmoreland county, and but a very small crevice in the rock would be sufficient to cause even a more disastrous explosion than the one at the Mammoth mine. There is a feeder of gas less than two miles from the Mammoth mine coming from the bottom, which will ignite from two to three feet above the floor of the mine with 20,000 cubic feet of air passing over it

per minute. It would take but a few hours to fill the mine with gas if the ventilation was cut off.

On Wednesday night after the explosion, in company with Mine Inspector James Blick, John Simpson and Fred. C. Keighley, I examined the fall and found fire-damp nine inches above the level of the coal, which indicated 8,000 cubic feet of fire-damp. Three hours later another examination was made, at this time the gas was three feet below the roof and extending quite a distance into the rooms and there must have been three times as much gas at this time as there was on the first visit. This shows clearly that gas was generating very fast from the fall or the rock above. The primary cause of the disaster was fire-damp, which was mostly if not all generated by the fall between Nos. 1 and 2 butts off No. 3 flat and the explosion was intensified by fine coal dust, which was raised by the force of the explosion and battered against the posts in some places nearly an inch thick, showing plainly the direction of the explosion. Fully 75 per cent. of the persons killed were smothered by after-damp. The only conclusion that can be deduced is that the gas was generated by the fall, hence we cannot be too careful but should watch for it at all times.

On the day of the disaster I was visiting the Osceola mine and upon my arrival home found a message informing me of the explosion, I at once started and arrived there a little after six o'clock, I at once took charge with others and directed the rescuing parties and assisted in building temporary stoppings so as to direct the current of air to the face of the headings, to enable us to secure the bodies. On Tuesday, near midnight, I discovered fire smouldering in the bottom in several places in Nos. 1 and 2 butts of 3 flat, I at once turned off the air, fearing the fire would be fanned into a flame, but with the timely assistance of General Manager Thomas Lynch and a few others with tubs and buckets of water the fire was soon extinguished. Many of the rescuing parties were apparently panic stricken when they heard about the fire and it was with difficulty that they were induced to assist in recovering the dead.

The condition of a great majority of the bodies showed clearly that they died from the effects of after-damp, which contained a large percentage of white-damp, although some were mutilated, an evidence that they were killed by the force of the explosion.

It is evident that the quantity of gas fired was not large, as there was little damage done to property, compared with the great loss of life. The ventilating fan was not injured, it being a forcing fan, neither was the shaft, cages nor derrick. The fan continued in operation after the explosion. Many of the bodies were found with their clothes on and their dinner buckets in their hands as though cut down while making their way out leisurely. The bodies found on the slope, Nos. 3 and 4 flats, were badly disfigured and many that were found on Nos. 1 and 2

butts were badly burned, which shows conclusively that this was the center of the explosion. Superintendent Robert Ramsay, Ex-mine Inspector Keighley, Mine Inspectors Blick, King and myself again visited Nos. 1 and 2 butts of No. 3 flat, examined the place carefully and all are of the opinion that the gas was fired at this point. The distance from the bottom of the shaft to where the gas accumulated is about 2,400 feet and to the face of the dip about 3,100 feet.

Many theories have been advanced as to the immediate cause of the explosion, but I do not think it necessary to enumerate them, as I have already given my views corroborated by the mine Inspectors and other practical men who made a thorough investigation, and from the fact that the mine was considered free from gas. The H. C. Frick Coke Company has always shown a willingness to make improvements having any merit, having from two to four times the quantity of air required by law circulating through their mines. The following letter was sent by General Manager Thomas Lynch to all the company's mines soon after the Hill Farm disaster: The late disaster at the Hill Farm mine should serve as a reminder and warning to us all, that we are liable to have accidents of the same kind, and we should spare neither time, labor, nor expense to guard against them. We should always keep the fact prominently in our minds that it is the desire of our company, and our duty as well, that we make the safety of the lives of our employes our first and most important business. If we have any weak places in the ventilation, or in any of the appliances for operating our mines, have them strengthened and made secure at once, and see they are kept in that condition. You should guard especially against fire, and allow nothing in the mine that would be likely to cause a fire. When you have gas, be sure you have competent, reliable and sober men for fire-bosses, study well the mining laws, and always do more than the law requires. It would be well for you to assume you had a fire or an explosion in your mine, and think out what would be the best thing to do, and what you would need to extinguish a fire, or give relief to the injured, or to rescue the imprisoned men, and provide everything you would likely need in such a case. It is very important that stairways, air shafts, manways and other means of ingress and egress to and from the mine be kept open and in good condition always. Do not overlook this under any circumstances.

(Signed) THOMAS LYNCH,
General Manager.

In November, General Manager Lynch sent another warning saying: The newspapers of last week furnish two warnings of danger from gas in the mines, and I would suggest that you take advantage of them to impress on your men the necessity of care and vigilance in every mine where the lives of men are at stake.

21-12-91

The foregoing letters explain themselves, and I will add that in an experience of forty years, I have seen no mines better equipped than those owned and operated by this company. They pay the highest salaries, and employ the most competent men to look after their mines.

The coroner held an inquest on the 5th and 6th of February, examined thirty witnesses, nearly all of whom were men who worked in the mine at the time of the explosion, or a short time preceding it. The examination of witnesses was conducted openly and was most searching, as the representatives of the miners as well as the company were permitted to ask questions. On the 14th of February the jury rendered a verdict in which they commended the general condition of the mine, and exonerated the company and its officials from all blame. The commission appointed by the legislature examined forty-four witnesses and made the following report. We are of the opinion that the Mammoth coal mines were reasonably well ventilated."

In conclusion, I will say that too much praise cannot be given to the superintendents, mine-bosses, fire-bosses, and English-speaking miners who aided in restoring the ventilation, exploring the mine and recovering the bodies.

I have been informed by some of the rescuing parties that their services had been recognized by small donations of money from the company. They were surprised, as they were not looking for anything, but were too willing to render any assistance in their power to rescue their unfortunate brethren. This act of the company is commendable, and should be the means of securing farther help should it ever be needed.

A small map accompanys this report, showing the location of the bodies found after the explosion.

On April 30, 1890, I gave notice to John P. Brennen, general superintendent of the McClure Coke Company, to employ four additional mining-bosses, as they were running seven mines with only three mining-bosses, viz: Hazlett shaft, Hazlett slope, Bessemer, Rising Sun, Donnelly No. 1, Donnelly No. 2 and Mayfield mines. General Superintendent Brennen appealed from my decision. On the 4th of October, 1890, the court appointed three practical persons to go at once and examine the mines and report under oath the facts as they existed. For some unexplained reason they did not report to the court until September, 1891. Finally, on January 30, 1892, the court sustained my decision.

On the 23d day of February I instituted legal proceedings against Samuel Woods for violating a part of section four, which reads as follows: "And every working place, and all other places, where gas is known to exist or supposed to exist, shall be carefully examined by the fire-boss, immediately before each shift." Mr. Woods was acting as fire-boss at the Yough slope at the time. The judge suspended sentence upon payment of costs, which amounted to $35.00

On October 19 I made another information against Herman Weire, for carrying a pipe and matches into a mine that was worked by safety lamps. The court suspended sentence in this case also, upon payment of costs. I can't guarantee that the court will always suspend sentence, so the best policy for all concerned is to obey the law and avoid trouble and expense.

Accompanying this report are the decisions and opinions of the Hon. Lucien Doty, judge of the several courts of Westmoreland county, on sections four, five and six of the bituminous mining act of June 30, 1885, that should be embodied in the report for future reference.

IN THE COURT OF QUARTER SESSIONS OF WESTMORELAND COUNTY, PA.

In re—Appeal of John P. Brennen, Superintendent of the McClure Coke Company's Mines, from the Decision of William Jenkins, Mine Inspector of the Second Bituminous District. Nos. 90, 91 and 92, May Term. Finding of Facts.

To the Honorable LUCIEN W. DOTY, *Judge of the Several Courts of Westmoreland county, Pa.:*

HONORABLE SIR: In pursuance of our appointment as a commission to examine and report on the facts as we find them, as to the mines of the McClure Coke Company, we hereby make the following report:

We examined the mines in question, and find the Hazlett mine composed of a shaft and slope, as per plan or tracing attached, marked "A." This mine has connection between the shaft and slope by an entry for drainage only, it being impassable for a traveling way, and has no traveling way communication underground, access between the shaft and slope being above ground. There are employed in this mine, in the shaft part about 73 men, and in the slope part about 31 men, and have for the overseeing of these two parts, one mine-boss—Alex. Davenport. Each part has its own tipple and each part is ventilated separately. The total number of men in both parts of the mine aggregate about 104, or about 75 miners.

Bessemer and Rising Sun mines, drifts; plan or tracing marked "B." We find these two mines connected by underground traveling way; they are both of small area and confined within a limited space. There are about 70 men employed in the Bessemer and about 43 in the Rising Sun, or about 86 miners in both. Each mine has its own tipple and are separately ventilated. There is one mining-boss employed for these two mines—George Burns.

Donnelly mines Nos. 1 and 2 and Mayfield mine; plan or tracing marked "C;" drift mines. East Donnelly mine lies on the east side of the railroad and was not connected with either of the other two, yet entries were being driven to connect it with the West Donnelly. There are about 45 men employed in this mine. Andrew Neish being mine-boss for this mine along with West Donnelly.

West Donnelly mine and Mayfield mine are both on the west side of the railroad and are connected with each other by a traveling way underground, made however since the action of the mine Inspector. There are employed in West Donnelly about 45 men and in Mayfield about 37 men, making a total of about 127 in the three mines, or about 103 miners. Andrew Neish is mine-boss for both West and East Donnelly mines, and Peter Glenn mine-boss for the Mayfield mine, he acting also as superintendent of the three mines inside and outside. Each of these three mines has its own tipple, and we understand that each of these three mines are separately ventilated.

We hereby offer or submit the above as a report of the facts.

JOHN F. WOLF,
ADAM B. HUFF,
PETER WISE.

The above report is sworn to by all the commission.

In the Court of Quarter Sessions of Westmoreland County.

In re-appeal of
John P. Brennen.

By the Court: On 30 June, 1885 the legislature of this commonwealth passed an act entitled "An act relating to bituminous coal mines and providing for the lives, health, safety and welfare of persons employed therein." It was intended to be a complete system. Everything is required that was thought to be for the welfare of the miners, and everything prohibited that was likely to prove detrimental to the lives, health or safety of those employed in such mines.

Among other provisions the act provides for the appointment of Inspectors, and prescribes minutely the duties to be performed by such Inspectors. It is one of the duties of an Inspector "to examine the mines in his district, as often as possible, which shall not be less than once in three months, to see that the provisions of this act are observed and strictly carried out."

In pursuance of his duty William Jenkins, an Inspector of the Second district, on the 30th of April, 1890, gave notice to John P. Brennen, superintendent of the McClure Coke Company, that but one mine-boss was employed for two mines, known as Bessemer and Rising Sun, contrary to the provisions of the fifth section of the said act of assembly, and requested an additional mine-boss to be employed by said company. From this decision of the Inspector an appeal was taken to the court of quarter sessions under the fourteenth section of the act. Again it was decided by the Inspector that the McClure Company was violating the fifth section in employing only one mining-boss for the mines known as Donnelly No. 1, Donnelly No. 2 and Mayfield, and also in employing one mining-boss for Hazlett shaft and Hazlett slope. From these latter decisions appeals were also taken. On 4th October, 1890, the court ap-

pointed three practical, reputable, competent and disinterested persons to forthwith examine such mines and report under oath the facts as they exist, together with their opinions. For some unexplained reason such report was not filed in court until 22d September, 1891. There is a difference of opinion among the viewers, but an agreement as to the facts as they exist. The fifth section of the act provides as follows: "In order to better secure the proper ventilation of every coal mine, and promote the health and safety of the persons employed therein, the owner or agent shall employ a competent and practical inside overseer, to be called the mining-boss." * * * We think there is no difficulty in arriving at the meaning of this section. From the language of the section, the expressed purpose of the act and the many and exacting duties imposed on the inside overseer, it seems plain that the section requires a mining-boss to be employed for every coal mine. The plain requirement is that to secure the proper ventilation of every coal mine a mining-boss shall be employed.

What then is a coal mine in the sense in which it is employed in this statute? A coal mine is defined as "a mine or pit containing mineral coal," and a mine is "a pit or excavation in the earth from which ores are taken by digging." The number of men employed is immaterial, as it is provided in a subsequent section that the act shall apply to every mine employing more than ten men. The extent of the mine does not seem to be a consideration in the mind of the legislature, nor the amount of territory embraced in one mine. It seems equally clear that it is not the intention to require a mining-boss for each separate working drift into the same mine. Nor is it necessary to inquire as to quantity of coal mined, or whether the output from a mine goes to diffeaent places. It is not intended that but one mining-boss should be employed by each coal company, or the legislature would have said so in unmistakable terms.

A single company may and frequently does control many mines extending over a great extent of territory. Underground communication is an element not to be lost sight of, but these ramifications underground may connect many different coal mines.

"Every coal mine," then, evidently, means every separate and distinct mining operation; a mine disconnected with any other mine; an excavation from which coal is taken by digging, having a system distinct and disconnected from any other mine. We have seen the definition of Webster, and as commonly understood, a coal mine is also a pit where coals are taken out by digging in a distinct and separate operation. Every coal mine has its machinery and equipment for taking out the coal; its shaft or slope, and system of ventilation; its mules and tracks and the men who work specially in that mine; and in and of itself contains every element of the definition, and so far as its operations are concerned, is independent of and disconnected from any other mine.

Now, what are the facts in these cases? The Hazlett mines are known as the Hazlett shaft and Hazlett slope. The two are connected by an entry for the purpose of drainage, but the entry is not sufficient as a passage for travel. Each mine has its tipple and its system of ventilation and, apparently, all the appliances for mining. Seventy-three men are employed in the one and thirty-one in the other. The only three things in common are, that they are operated by the same company, have substantially the same name and one mining-boss has supervision over both. In all other respects, so far as we are advised of the facts, each is independent of the other. We have no doubt that one mining-boss could supervise both these mines. The territory is not large and not many men are employed; but we are also persuaded that each is a distinct coal mine, and under the act it will be necessary to employ another certificated mining-boss, one for Hazlett and one for Hazlett slope. It might be a more reasonable requirement to give a mining-boss supervision of a certain amount of territory, or over a certain number of men; but if such change is desirable it is for the legislature and not for the court.

When we look at Bessemer and Rising Sun mines, the situation is somewhat different. These are connected by underground traveling ways. Both are of small area and confined within a limited space and only about eighty-four miners are employed in the two mines. Each mine has its own tipple and its own system of ventilation, and one mining-boss has supervision of the two. Each seems to be complete in itself and independent of any other. Bessemer has all machinery and equipment necessary for mining coal, and the operations there would go on if the other had no existence.

What is true of Bessemer is also true of Rising Sun. The two mines are not one. The two have underground connection. One mining-boss, in our opinion, could easily superintend both mines. But we have no discretion in the matter and our duty is simply to construe the law, and, as we understand it, the law requires a mining-boss for every coal mine.

It is very evident that East Donnelly, West Donnelly and Mayfield are three distinct mines. Each has its own tipple. Each its system of ventilation and all the machinery and equipment necessary for mining coal. One mining-boss has supervision over East and West Donnelly and one mining-boss over Mayfield. Between East and West Donnelly there seems to be no connection underground. And yet in these three mines only 103 miners are employed. It seems an unnecessary burden to impose on the company the duty of employing three mine-bosses, but under the facts found, such seems to be the law.

The concluding paragraph of the minority opinion is as follows:

"I am also of the opinion that one mine-boss can properly attend to two or three or more small mines, where the outlets are convenient of access to each other and within close proximity to each other, where the

number of men aggregate within reason, say 200 men. There are many mines in the bituminous region having one boss where there are employed from 250 to 500 men, and the area of such mines being of far greater extent than is the area of any of these mines in dispute, namely, the Hazlett, Banner, Bessemer, Rising Sun, Donnellys 1 and 2 and Mayfield."

This seems to be reasonable but it is not law. The act requires a mining-boss for every mine. Such construction may be a hardship upon the mine owner, but if a hardship, the legislature alone can give relief.

And now, January 30, 1892, it is therefore ordered and directed that one certificated mining-boss be employed for each of the following mines: Hazlett shaft, Hazlett slope, East Donnelly, West Donnelly, Rising Sun, Mayfield and Bessemer.

And it is further ordered that the appellant pay the cost of this proceeding, including a reasonable compensation to the viewers, which compensation shall be agreed upon by the counsel for the parties, or, on failure to agree, hereafter to be fixed by the court.

During the last year I have made several attempts to enforce the mining law, all of which were successful.

On the 23d day of February, 1891, I made an information against Samuel Woods, a fire-boss at the Yough slope mine in Westmoreland county, for violating section four of the mining law, he having neglected his duty as fire-boss; he was subsequently indicted and tried at No. 65, May term, 1891, in the court of quarter sessions of Westmoreland county, Pa., entering a plea of guilty.

On the 19th of October, 1891, information was made against Herman Weire, a miner at the Calumet Coke Works, in Westmoreland county, and he was subsequently indicted and tried at No. 74, November session, 1891. Mr. Weire, on the 16th of October, 1891, was found with matches and a pipe in his possession, he being at the time in a part of the said mine worked by safety lamps; he was indicted for violating section six of the mining law, approved the 30th day of June, 1885, which provides as follows, to-wit:

"Any miner, workman or other person, who shall intentionally injure any shaft, lamp, instrument, air course or brattice, or obstruct or throw open any airways, or carry lighted pipes or matches into places that are worked by safety lamps, etc."

The question in this case was whether the act above recited referred to matches that were not lighted; the learned court construed the act to mean that no matches whatever were to be carried into such mines. The defendant was convicted and the learned court overruled a motion for a new trial.

Both these were first offenses and the learned judge suspended sentence upon payment of costs by the defendant.

The following is a table of the fatal and non-fatal accidents and their causes for the year:

	Fatal.	Non-fatal.
By falling slate,	10	14
By falling coal,	2	5
By explosion of fire-damp,	109	. . . .
By mine wagons,	3	14
By cage,	2	1
By coal roof,	3	1
By premature shot,	1	. . . . .
By a block of wood falling down shaft,	1	. . . . .
By cars falling from tipple,	1	. . . . .
By post,	2	1
By pick,	. . . . .	1
Kicked by a mule,	. . . . .	1
Total,	134	38
Widows by fatalities,	. . . .	79
Orphans by fatalities,	. . . .	156

The following statistics are a summary of accurate reports from all the mines as set forth in the tables:

Mines in the district,	82
Mines in the district operated,	72
Mines opened during the year,	2
Number of persons employed in the mines,	8, 503
Number of persons employed outside,	3, 080
Total number of persons employed,	11, 583
Tons of coal mined,	6, 751, 615$\frac{200}{2000}$
Tons of coal shipped,	3, 988, 490$\frac{800}{2000}$
Tons of coke manufactured,	1, 760, 264$\frac{100}{2000}$
Average number of days worked by fifty-four mines,	230.74
Tons of coal mined for each fatal accident,	50, 385. 18
Tons of coal mined for each non-fatal accident,	177, 674
Number employes for each fatal accident,	86.44
Number of employes for each non-fatal accident,	304.8
Number mules and horses in use,	997
Number of coke ovens operated,	7, 199
Number of mine locomotives,	3
Number of stationery engines for hoisting and hauling coal,	74
Number of pumps in use,	100
Number of steam boilers in use,	217

From the foregoing statistics it will be seen that the production of coal and coke has fallen off. The decrease in coal production is 224,263 tons, and in coke production 1,021,126 tons. Taking a ton and a half of coal to produce a ton of coke, which is a fair average, this will show a decrease in the production of coal in the coking part of the district of 1,531,689 tons. This decrease was caused by a strike in the early part of the spring, together with a depression in the coke trade for the remainder of the year. The other part of the district did remarkably well as is shown by the increased shipment of 1,122,038 tons. Notwithstanding the five weeks strike at the mines, on the B. and O. railroad, there is an increase of sixteen persons on the inside, and a decrease of one hundred and ninety-seven persons on the outside. This will show a decrease in the total number of persons employed of one hundred and eighty-one.

Owing to the large number of persons killed in the mines this year, I will offer a few suggestions. In all mines where fire-damp generates, be sure that you have sober reliable and conscientious fire-bosses, and on the discovery of drunkenness or neglect of duty, they should be at once dismissed. Allow no standing gas to remain in your mines that can possibly be removed, see that all loose coal and rock is taken down or secured, see that no one is allowed to ride out on full cars, or on the dilly roads. I fear that the practice of carrying powder into the mine in twenty-five-pound casks will result disastrously, and should be entirely forbidden. The coal dust in some of our dry mines should be dampened with water. All rib drawing where gas generates on the falls should be drawn with locked safety lamps. I hope that the foregoing suggestions will be strictly carried out, and that those having charge of the mines will strictly enforce the law and the rules governing the mines.

All of which is respectfully submitted.

WILLIAM JENKINS,
Inspector.

IRWIN, WESTMORELAND COUNTY, PA., *February 27, 1892.*

DESCRIPTION OF MINES AND MINE IMPROVEMENTS IN THE SECOND BITUMINOUS DISTRICT.

Alexandria Mine.—An air shaft, 110 feet deep and 9 feet in diameter, was sunk for ventilation and a furnace built; dimensions of furnace fire bed 7′×8′, length of arch, 15 feet. Since the furnace was built I have measured on an average of 23,843 cubic feet per minute going out at the outlet, and this volume was fairly distributed through the mine. This quantity can be increased by firing up well, to 35,000 cubic feet per minute. The drainage was in fair condition, except in No. 5 heading, where they were drawing ribs. Mining-boss, Daniel Campbell.

Amieville Mine.—This mine has been idle since the seventh day of

March, on account of some trouble between the land owners and the coal company. On my visit, March 2d, I measured 27,840 cubic feet of air going out at the outlet per minute. This quantity was fairly distributed, and the drainage was good. Mining-boss, John McVicker.

Big Chief.—Important improvements have been made at this mine within the year, a furnace for ventilation was built, size of furnace, fire bed 7′×8′, length of arch 20 feet. The air shaft is 49 square feet. The average amount of air in circulation per minute was 15,387 cubic feet. A tail-rope system of haulage was erected, length of haul 3,400 feet, size of engine cylinders 12″×24″, steam pressure sixty pounds, geared 61, main and tail ropes ½″. Mining-boss, H. D. Thomson.

Carbon Mine.—This mine has been kept in a healthy condition with an average of 41,870 cubic feet of air going in at the inlet per minute. The distribution was fairly attended too. A Yough pump was put in to drain the mine. Size 20″×14″×48″. Mining-boss, Joseph Weightman.

Calumet Shaft.—This mine is in a healthy condition, with an average of 41,053 cubic feet of air going in at the inlet per minute. They have built two overcasts in order to do away with some of the doors on the main hauling roads, and also to divide the current of air. There is now a fresh current of air sweeping the face of all the headings. The mine is lighted by locked safety lamps, no more "Black Strap" and "Carbon oil" torch lights to be seen, this is a wonderful improvement over the old system. The air is now pure all over the mine. Mining-boss, John Nicholson.

Duquesne Mine.—This mine has been kept in a reasonable condition during the year. The average quantity of air in circulation was 16,155 cubic feet per minute. The drainage is fair. Mining-boss, Mark James.

Dilworth Mine.—The general condition of the mine is very reasonable. The average amount of air in circulation per minute was 12,710 cubic feet. Mining-boss, Thomas Whiteman.

Denmark Mine.—This mine has always been kept in very fair condition. On my last two visits the air current was too far away from the face and was not properly distributed. The mine-boss gave as his reason for this state of affairs, that he had been busy changing the hauling road, and he had to drive a considerable distance through the gob to make the change, we should not allow anything to interfere with us, because the question of ventilation is so important. There was 45,480 cubic feet of air per minute going out at the outlet, this would give each person employed in the mine 170 cubic feet of air per minute if properly distributed. Mining-boss, Edmond Whiteman.

Eureka Mine.—The general condition of the mine is fair, with an average of 18,777 cubic feet of air going out at the outlet per minute. The distribution of this volume is well attended to. Mining-boss, James Bayley.

Emma Mine.—This mine has been kept fully up to the requirements of the law. The average quantity of air in circulation was 10,853 cubic feet per minute. The distribution was all right. Mining-boss, Adam Whitehead.

Greensburg No. 1 Mine.—This mine has been kept in fair condition during the year. The average quantity of air going out at the outlet per minute was 20,308 cubic feet. The distribution of this volume was fairly attended to. Mining-boss, David Clark.

Greensburg No. 2.—This is a new mine, a drift opening, situated about three miles south from Greensburg, Westmoreland county, on the Southwest Branch of the P. R. R. The mine is well opened; has two openings well timbered, and it was the intention to sink an air-shaft and build a furnace at once. The improvements outside are tipple and an office. Twenty-eight persons were employed at the time of visit, December 9. Mining-boss, John McIntire.

Hampton Mine.—This mine don't always get the attention it should have. There is always plenty of air at the outlet to give each person employed in the mine nearly 200 cubic feet of air per minute if properly distributed. Mining-boss, Edgar Thompson.

Hempfield Slope.—An air-shaft was sunk at this mine this year and a 12′ fan erected. The fan was built by the Novelty Manufacturing Company of Irwin, from plans given by A. N. Humphreys, mining engineer for the Westmoreland Coal Company. The fan gives great satisfaction. Since the fan has been erected I have measured on an average 51,000 cubic feet of air going in at the inlet per minute, nearly 468 cubic feet per minute for each person employed in the mine. A mining-boss that can't keep his mine well ventilated with that quantity of air should quit and go at something else. Mining-boss, Levi Ludwick.

Hecla Nos. 1 and 2 Shafts.

No. 1 Shaft.—This mine is in good condition, with an average of 39,190 cubic feet of air going in at the inlet per minute. This volume is divided into two currents and well distributed through the mine. Mining-boss, William Dean.

No. 2 Shaft.—The mine is ventilated at present with exhaust steam, which gives an average of 18,960 cubic feet of air per minute. This quantity is fairly distributed through the mine. The company is erecting a 30′ fan, which it will have ready in a short time. This will be the largest fan in the district. It has also built a neat pump-house. Mining-boss, William Snedden.

Mutual Nos. 1, 2 and 3 Mines.

No. 1.—There was scarcely any work done in this mine during the year.

No. 2.—This mine has been kept in a healthy condition, with an aver-

age of 19,493 cubic feet of air going out at the outlet per minute, and the distribution is all right.

No. 3.—On my first visit the ventilation was defective at the face of the headings, notwithstanding there was 20,160 cubic feet of air going out at the outlet per minute. On each subsequent visit I found the mine all right. Mining-boss, William M. Hart.

Mammoth Nos. 1 and 2.—I have made four regular visits to this mine since May 25, 1891, at neither of these visits did I see any fire-damp, except a very small feeder at the head of No. 4 flat, which I considered very harmless. The fire-bosses have not seen any either, except this that I mentioned above. I made a thorough examination of the dip workings with the mine-boss and the fire-bosses on December 31, and we went over the falls in the headings where the explosion happened, and we could not see the least trace of fire-damp after making a careful examination. The average quantity of air going in at the inlets per minute was 61,932 cubic feet. There have been many important improvements made in the mine since the explosion. The system of ventilation has been completely changed. A large brick overcast has been built over the slope for the inlet current of air, and a smaller one was built on No. 2 flat in order to divide the current, thus making the main slope the return airway. Arrangements have been made to build another overcast over No. 1 butt, 1st flat; this when completed will take the main body of air off the traveling way. Eighteen brick stoppings were built so as to prevent leakage. Traveling way has been graded, corduroyed and whitewashed from entrance to No. 3 flat of slope. An air-shaft was sunk on sixth butt of fourteenth flat, 6′×8′, 45 feet deep, for the future return of air. The said air-shaft has been timbered, whitewashed and fitted up with stairs and all conveniences for an escapeway if necessary. A new 8″ water line has been laid on main slope of shaft, 3,000′ in length, for conveying water from the dip to pump station. Three bore-holes have been put down 105 feet in depth, two 12″ holes and one 14″. Two of these holes are used for pumping water out of the mine; the other one to be used for steam, air and exhaust. A new pump-house has also been built at the pumping station in the mine which is sufficiently large for holding three pumps. The pump-house is timbered with 10″×12″ timber and the floor laid with 3″ plank. The entrance of traveling way into the mine has been straightened, enlarged, timbered and whitewashed. A water course was driven from surface to No. 1 flat of slope to carry off all surface water from mine. On my last visit to the mine I obtained the following air measurements: Inlet to slope, velocity, 500′×42′=21,000 cubic feet; inlet to dip workings of shaft, velocity, 940′×53′=49,820; total at both inlets, 70,820 cubic feet per minute. No. 3 flat, velocity, 340′×52′=17,680 cubic feet; No. 4 flat, velocity, 260′×47′=12,220 cubic feet per minute. This quantity of air gives to each person employed in the mine 265 cubic feet per minute.

All persons in the mine are using the locked safety lamp, and it is the intention, in the near future, to use electricity to light the shaft bottom. The mine is now in first-class condition. Mining-boss, James Eaton.

McClure Coke Company Mines.

Donnelly No. 1.—The ventilation in this mine was rather defective during the year. The average quantity of air going out at the outlet per minute was 7,887 cubic feet. On my last visit a fan 12′ in diameter had been erected, size of engine 8″×14″. The monthly report of the mine-boss for December showed that the fan had been started, and the air measurement at the outlet indicated 28,560 cubic feet per minute. This quantity is ample if properly distributed. Drainage all right.

Donnelly No. 2.—The ventilation in this mine has been rather defective during the year. The average amount of air in circulation per minute was 5,260 cubic feet. The drainage was all right. Mining-boss, William Alexander.

Mayfield.—This mine has been kept in a healthy condition during the year, with an average of 9,540 cubic feet of air in circulation per minute. Mining-boss, Peter P. Glenn.

Buckeye.—The ventilation was rather defective during the summer months. The company erected a fan 12′ in diameter, engines 8″×14″, attached direct to the fan. On my visit after the fan was started I measured 33,600 cubic feet per minute going out at the outlet, when the fan was speeded to 80 revolutions per minute. The mine is in a healthy condition now, and with proper care it can be kept in that condition, because there is ample means for ventilation. Mining-boss, George J. Burns.

Bessemer and Rising Sun Mines.—These mines have only worked thirty-three days this year.

Enterprise Mine.—This mine has only worked a few days.

Hazlett Shaft—This mine was in fair condition at the time of my visit.

Hazlett Slope.—This mine has worked but a very short time this year, and was not working at the time of my visit. Mining-boss, Alexander Davenport.

Mullin.—This mine has been kept in very fair condition during the year. The average quantity of air going out at the outlet per minute was 11,733 cubic feet. The quantity was fairly distributed through the mine. Mining-boss, Hugh Ross.

Union.—On my first visit to this mine the ventilation was very defective, and the company stopped operations for a few days in order to build a furnace. Size of furnace, length of arch, 20′, fire bed, 6′×6′, 36 square feet. The air shaft is 18′ deep, with a stack 26′ high. On my subsequent visits I measured an average of 13,160 cubic feet of air

going out at the outlet per minute, and this volume was fairly distributed through the mine and keeps the mine in a healthy condition. Mining-boss, R. S. Raygor.

Manor Shaft.—The condition of this mine has been very favorable during the year, with an average of 28,850 cubic feet of air per minute going out at the outlet. The distribution of this volume was very reasonable. Mining-boss, Samuel Furguson.

Hostetter Coke Company Mines.

Lippincott Mine.—The mine is in a healthy condition. The average amount of air going in at the inlet per minute was 40,600 cubic feet. This volume was well divided and circulated to the face of the workings. Mining-boss, George Eustis.

Whitney Mine.—This mine is kept fully up to the requirements of the law, with an average of 59,160 cubic feet of air going in at the inlet per minute. This volume is divided and well circulated through the mine. After removing the pillars fire-damp has appeared on the falls, and the company is now drawing the pillars with locked safety lamps. Mining-boss, John Pratt.

West Overton Mine.—This mine is in favorable condition, with an average of 9,400 cubic feet of air in circulation per minute. Mining-boss, John Boyle.

West Newton Shaft.—This mine has been kept in a healthy condition, with an average of 44,940 cubic feet of air passing out at the outlet per minute. The distribution of this volume is well attended to. Mining-boss, Robert Hall.

Weinman Mine.—When I visited this mine in October I could not take any air measurements, and I informed the operator of this fact. He promised to remedy this trouble at once, and his December monthly report showed that he had done so. Mining-boss, Jacob Weinman.

Ocean Mine.—This is a small mine furnishing custom coal, and owing to the failure of natural gas, the number of miners had to be increased so as to bring the mine under the provisions of the law. On my visit, October 15, I found the ventilation and drainage in a rather bad condition. I notified the operator that he must make some alteration at once, and he proceeded to erect a small basket furnace in one of the outlets for ventilation. The miners objected to this, as they would have to walk a little further to get out, so he was obliged to have another air shaft for ventilation. Mining-boss, Gotleib Vogele.

Penn Gas Coal Company Mines.

Coal Run.—The condition of this mine is very favorable, having an average of 23,017 cubic feet of air going out at the outlet per minute. The distribution of this volume was all right. Mining-boss, William Rodgers.

Penn Gas No. 1 Shaft.—The condition of this mine is favorable, with an average of 32,220 cubic feet going out at the outlet per minute. The distribution of this volume is reasonable. Mining-boss, John Bolam.

Penn Gas No. 4.—This mine was idle for a considerable time and only started up about the first of December, and on my visit, December 29, I measured 32,830 cubic feet of air going out at the outlet per minute. They had not made the proper distribution of this volume at the time of my visit. Mining-boss, John Giles.

Penn Gas No. 2 Shaft.—This mine is in a healthy condition, having an average of 40,901 cubic feet of air going out at the outlet per minute. The general distribution of this volume was favorable. Mining-boss, William Jamison.

New York and Cleveland Gas Coal Company Mines.

Plum Creek.—This mine has been in fair condition during the year, having an average of 19,893 cubic feet of air going out at the outlet per minute. There are several inlets of air going into the mine and the distribution was fairly good. Mining-boss, William W. Carter.

Oak Hill No. 4 Mine.—This mine has been in very fair condition since the air shaft was sunk and a new furnace was built. Dimensions of furnace, fire-bed 8′×11″, length of arch 42 feet, the arch is double, having a passage for air of 9 inches below them, there are two manways $2\frac{1}{2}$ feet each between the furnace and coal for protection against fire. The average quantity of air in circulation was 22,780 cubic feet per minute. Since my last visit they have made several additional inlets, thus increasing the volume of air to 52,000 cubic feet per minute and supplying each heading with a fresh current of air. Mining-boss, William P. Owens.

Sandy Creek.—This mine is kept in a healthy condition, having an average of 26,440 cubic feet of air going out at the outlet per minute. The distribution of this volume was fairly attended to. Mining-boss, Joseph Corbett.

Osceola Mine.—The general condition of the mine is favorable. The average quantity of air going out at the inlet per minute was 31,160 cubic feet. The air is very well conducted throughout the mine and the drainage is all right. Mining-boss, Frank Ridley.

Osceola No. 1.—This mine has been kept in a healthy condition, having 25,598 cubic feet of air going out at the outlet per minute. The distribution of this volume was reasonably good. Mining-boss, John Matthews.

Port Royal No. 1 Shaft.—The general condition of this mine is good and the average quantity of air going out at the outlet per minute was 19,400 cubic feet. This volume was distributed all right. Mining-boss, Robert R. McElroy.

Robbins Mine.—On my first visit to this mine the ventilation was very defective and an air shaft 7 feet in diameter and 128 feet in depth was

sunk and a furnace built. There are two furnaces 6′×6″, 72 square feet of fire-bed. On my last visit I measured 35,680 cubic feet of air going out at the outlet per minute and the distribution of this volume was all right.

Smithton No. 1 Mine.—An air shaft was sunk near the face of this mine, the shaft is 9 feet in diameter and 100 feet in depth. There is now a fresh current of air at the face of the workings, the average quantity of air in circulation was 18,000 cubic feet per minute. They have also built a self-acting incline plane on No. 34 heading to drop the coal from the upper range of work to the parting on the lower main heading, from there it will be taken out by a tail-rope system of haulage.

No. 2 Mine.—Is in fair condition with an average of 11,013 cubic feet of air in circulation per minute. Mining-boss, Edward Bell.

Spring Hill No. 2 Mine.—On June 4 I found the ventilation very defective and what little air there was had to pass through a hole that I could hardly crawl through, I ordered the hole to be cleaned out which was done, increasing the quantity of air from 4,400 to 7,560 cubic feet per minute, afterwards the company sunk a shaft 6 feet in diameter and 67 feet in depth and built a furnace; dimensions of furnace fire-bed 8′×8′, length of arch 20 feet. On October 24 I measured 17,600 cubic feet flowing out at the outlet per minute and this volume was fairly distributed through the mine. Mining-boss, William S. Gibson.

Shaner No. 2.—The company has made some improvements this year, first it has moved their hoisting engine in a direct line with the slope to make it of an uniform grade. I have found on my several visits that the mine-boss kept the mine generally in a fair condition, with an average of 24,000 cubic feet of air flowing in at the inlet per minute. The distribution of this volume was fairly looked after. Mining-boss, Ruben Street.

Madison Mine.—A new furnace was built at the mine this year. After the furnace was built I measured on an average 17,753 cubic feet of air in circulation per minute. This quantity can be increased by keeping a brisk fire in the furnace. Mining-boss, Martin Doyle.

The Southwest Coal and Coke Company's Mines.

No. 1 "A" Shaft.—There were some important improvements made inside and outside of this mine during the year. A duplex air compressor, steam cylinder 12″ diameter, air cylinder 14″, 30″ stroke for handling the mine water, one battery of tubular boilers 60″ diameter by 14′ long, a new brick boiler house, an air compressor room, and a new pump house at the bottom of the shaft. The mine is kept in first-class condition with an average of 72,645 cubic feet of air going in at the inlet per minute. This volume is judiciously divided and circulated throughout the mine. Mining-boss, John Duncan.

No 1 "B" Shaft.—This mine is kept all right with an average of 51,-

113 cubic feet of air going in at the inlet per minute. The distribution of this volume is well looked after, and the air is circulated to the face of the workings, both these shafts are connected and are lighted with locked safety lamps. Mining boss, John Whitfield.

No. 2 Mine.—The slope bottom has been timbered with 10″×12″ posts and 12″×14″ collars which make a very neat job. The average vuantity of air going in at the inlet per minute was 76,630 cubic feet. This volume is well divided and circulated throughout all the mine. This quantity gives each person employed in the mine 539 cubic feet per minute, and it is not any too much, although "fire-damp" has never been seen in the mine, but there is plenty of "black-damp" "carbonic acid" gas. Mining-boss, James Yardley.

No. 3 Shaft.—Two shafts have been sunk at this mine within the year, an air and a pumping shaft. A 20′ diameter fan was erected on top of the air shaft to force air into Nos. 3 and 4 mines. Size of engine cylinder 16″×32″, the engine is attached directly to the fan. On my last visit I measured at the inlet 58,400 cubic feet going in per minute. This volume was fairly distributed and circulated throughout the mine. The mine is lighted altogether with the locked safety lamp. Mining-boss, Luther Flesher.

No. 4 Mine.—There have been many important improvements made inside and outside the mine this year. A brick engine house, a new engine, new boilers, and a new haulage plant have been erected. A complete change has been made at the mine. The 20′ diameter fan that ventilates No. 3 mine ventilates this mine also. On my last visit I measured 28,800 cubic feet of air going in at the inlet per minute. This quantity was divided into two parts and fairly distributed throughout the mine. Mining-boss, Robert Morris.

Standard No. 2 Shaft.

An electric plant has been erected at this mine. One 10″×12″ high speed engine, one Westinghouse dynamo of 100 lamps, 16 candle power capacity. Twenty-seven of these lights are used to light the buildings on the surface, and 41 are used underground, distributed as follows: 10 at the shaft bottom, 4 in the manway, 7 in the pump house, 2 at the oiling station, 1 at the horseway, 3 in the haulage engine house, 2 at the haulage siding switches, 1 in the shoeing shop and 7 in each of the two stables. These different lights are graded from 16 to 50 candle power, depending on the light required at the various stations. I have seen the plant in operation, it gives perfect satisfaction and there is no trouble in seeing a pin on the floor of the mine, and the cost of running the plant will not exceed the carbon oil lamp, and is much safer. The mine is kept in very good condition with an average of 53,320 cubic feet of air in circulation per minute. They have driven three additional air courses to the No. 1 shaft. This shortens the distance and by so doing it reduces

the friction and increases the quantity of air more than one-half without increasing the speed of the fan. On November 5 I measured 112,540 cubic feet per minute going in at the inlet. Another pump for drainage has been put in this year. Size of pump: Steam cylinder 26″×48″, water cylinder 14″×48″. There are three pumps of this size in the mine. They are getting ready to introduce the tail-rope system of haulage. Mining-boss, John A. Hart.

Slope.—This mine has not been running since the strike in the spring. The mine is kept in good condition when running with an average of 37,000 cubic feet going in at the inlet per minute and well distributed through the mine.

United No. 1.—This mine has again resumed operations after having been closed for nearly a year, which was caused by the fire that occurred on December 26, 1890. In rebuilding, the company have spared neither time nor money in order to make a complete job of work. They have used all possible care to make the mine as safe as the ingenuity of man can make it. A solid stone foundation was built for the hoisting derrick to rest upon, and a brick engine house 31′×40′. The hoisting engines are first motion 24″×36″, built by the Vulcan Iron Works, Wilkesbarre, Pa., conical drums 6½′×8,′ steel wire rope 1¼″, sheaves 13′, a brick boiler house 41′×70′ containing four tubular boilers 5′ in diameter by 14′ long. The cages are self-dumpers, and the coal is carried away to a bin a distance of 60′ through a trough by a system of scrapers 20″×8.″ There are 43 of those scrapers in each trough worked by an endless chain system attached to an engine at the far end of the tipple; size of engine 8″ in diameter by 10″ stroke. This system was erected by the Belt Engine Company, of Nicetown, Philadelphia, Pa. The shaft bottom has been timbered with 8″×16″ timber. The collars are double and bolted together, the pump house has been enlarged and retimbered with 8″×16″, collars bolted together 2′ from center to center the same as at the bottom of the shaft. The pump house is 60′×18′ in the clear, and is supplied with four pumps, three Camerons 18″ diameter by 28″ stroke, one Yough pump 24″ diameter by 48″ stroke, two discharge pipes 12″ diameter, one steam exhaust 10″ and a steam pipe 6″ in diameter. The main stoppings have been built with brick, some of them are three feet thick. A brick oil house has been built at the bottom of the shaft to keep oil in for the mine wagons. The air-shaft has been retimbered and the steps taken out and a cage placed in the shaft to hoist the men in case of accident to the hoisting shaft. The whole plant, including stables, outside and inside, fan house, air-shaft, pump house and shaft bottom are all lighted by electricity. The plant was erected by the United States Electrical Company of Newark, N. J. The mine foreman, William West, informs me that the electric lights are a perfect success. The mine is lighted by locked safety lamps. This is a decided improvement over the black strap and carbon

oil torches that were in use, and the safety and sanitary condition of the mine has improved one hundred per cent. On my visit, December 11, I measured 59,800 cubic feet of air going in at the inlet, and this volume is well distributed through the mine. If the fan was speeded to seventy revolutions they would get 114,480 cubic feet per minute, and would only show one inch of water gauge or drag. This model mine is under the efficient management of William West as underground foremen.

United No. 2.—There is an average of 50,238 cubic feet of air per minute at the inlet, but owing to difficulties some of the headings are not well ventilated. I believe the mine-boss is doing all he can to overcome those difficulties, and have the mine in first-class condition. The mine is swampy and hard to drain, but they are succeeding very well with it, and in the course of a few months I hope to see it in good order; all the pump connections are of wood and so are the water pipes in the mine. Mine-boss, J. F. Anderson.

Youghiogheny Shaft.—This mine has been kept in a very good condition during the year. The average quantity of air going out at the outlet per minute was 30,740 cubic feet. This volume is well distributed through the mine, and the drainage is well looked after. Mining-boss, James Collins.

Yough slope.—The ventilation was rather defective on my first two visits, and the drainage was not very good. The company sunk an air shaft and a slope. The slope is used as a traveling way. A 12 foot exhaust fan was erected on the shaft. The fan was built by the Novelty Manufacturing Company of Irwin, from plans made by A. N. Humphreys, mining engineer for the Westmoreland Gas Coal Company. On July 29 I measured 35,040 cubic feet, and on October 22 I measured 44,400 cubic feet per minute going out at the outlet and the distribution of this volume was well attended too. They have also put in a new pump. This will keep the mine well drained. No. 1 and 2 deep entries generate considerable "fire-damp" and "carburetted hydrogen," but with proper care the mine can be kept safe and in first-class condition. Mining-boss, James Latimore.

Westmoreland Gas Coal Company's Mines.

South Side.—Important improvements have been made inside and outside of this mine during the year, in order to introduce the endless rope system of haulage, to take the place of the locomotive that had been in use here before. The grade was heavy and was not suitable for the locomotive, as the company wanted to increase its output of coal, it also required 45,000 cubic feet of air per minute to keep the locomotive road in a healthy condition. The outside improvements are an engine house, one pair of second motion engines 14″×20″, geared 2 to 1, Grove drums 4′ 6″, steam pressure 80 pounds, size of rope $\frac{3}{4}$″. They haul 35 wagons each trip, there is an out-grade from the pit mouth to the tipple for full

wagons, and an in-grade a short distance from the tipple for empty wagons. The empty wagons are taken from the tipple to the top of this grade by an endless chain. The pit mouth was changed and timbered. The sides of the heading was slabbed and straightened and the road made nearly of a uniform grade. The mine is now in good condition, with an average of 51,278 cubic feet of air per minute going in at the inlets. This volume is divided and circulated throughout the workings. Mining-boss, John Williams.

Larimer No. 3.—This mine has been kept in a reasonable condition during the year, with an average of 20,610 cubic feet of air in circulation per minute. Mining-boss, Arthur Fowler.

Larimer No. 4.—This mine has been kept in good condition during the year, with an average of 48,200 cubic feet of air going in at the inlet per minute. The mine is ventilated by the split air system, and every pair of headings gets a fresh supply of air from the inlet. Mining-boss, George Carroll.

Westmoreland shaft.—This mine is well looked after and kept in good condition. The average quantity of air going out at the outlet per minute was 90,000 cubic feet. This quantity is divided into several parts and circulated to the face of the workings. When drawing ribs the rock falls in and considerable "fire-damp" was generated from the strata so that they had to use safety-lamps in drawing out the room pillars. On February 4 I measured 116,630 cubic feet of air going out at the outlet per minute. Mining-boss, James Thompson.

TABLE I—*Showing location of Collieries in the Second Bituminous Mine District.*

NAME OF COLLIERY.	Name of Operator.	Location—County.	Name of Superintendent.	Postoffice address.
Amyville	Youghiogheny Gas Coal Company	Westmoreland county	S. H. Grace	Suterville, Westmoreland county.
Arnold	Arnold Coal Company	do. do.		Burrell, Westmoreland county.
Alexandria	Alexandria Coal Company	do. do.	Thomas Donohoe	Greensburg, Westmoreland county.
Armstrong	do. do.	do. do.		Youghiogheny, Westmoreland county.
Big Chief	John Blythe & Co.	do. do.	John Blythe	West Newton, Westmoreland county.
Buckeye	McClure & Co.	do. do.	James Dumphy	Stauffer's, Westmoreland county.
Bessemer	do. co.	do. do.	James Devlin	Mt. Pleasant, Westmoreland county.
Claridge	Claridge Gas Coal Company	do. do.	J. H. Patton	Greensburg, Westmoreland county.
Carbon	Carbon Coal Company	do. do.	F. I. Kimball	do. do.
Calumet	Calumet Coke Company	do. do.	S. M. Hankins	Calumet, Westmoreland county.
Donnelly Nos. 1 and 2	McClure & Co.	do. do.	Peter P. Glenn	Stoners, Westmoreland county.
Dilworth	William P. Dilworth & Co.	do. do.	Thomas Whiteman	Frank, Allegheny county.
Duquesne	Corey Coal Company	Allegheny county	William L. Dixon	Swissvale, Allegheny county.
Denmark	Manor Gas Coal Company	Westmoreland county	A. P. Cameron	Claridge, Westmoreland county.
Eureka	Eureka Coal Company	do. do.	William McCune	West Newton, Westmoreland county.
Emma	Miss Maria F. Overholt	do. do.	J. W. Overholt	Scottdale, Westmoreland county.
Frankstown	Jacob Weinman	Allegheny county	Jacob Weinman	Wilkinsburg, Allegheny county.
Greensburg No. 1	Greensburg Coal Company	Westmoreland county	A. W. Jones	Greensburg, Westmoreland county.
Greensburg No. 2	do. do.	do. do.	do.	do. do.
Graver	New York and Cleveland Gas Coal Co.	Allegheny county	William Fisher	White Ash, Allegheny county.
Hampton	Hampton Coal Company	do. do.	John S. Stewart	Edgewood Park, Allegheny county.
Hecla No. 1	The Hecla Coke Company (Limited)	Westmoreland county	Thomas Laird	Southwest, Westmoreland county.
Hecla No. 2	do. do. do.	do. do.	do.	do. do.
Hempfield	Hempfield Coal Company	do. do.	A. W. Jones	Greensburg, Westmoreland county.
Hazlett Nos. 1 and 2	McClure & Co.	do. do.	William Murray	Stauffers, Westmoreland county.
Lucesco	Leechburg Coal and Coke Company	do. do.	W. H. Wray	Leechburg, Armstrong county.
Lippencott	Hostetter Coke Company	do. do.	F. J. Friend	Hostetter P. O., Westmoreland county.
Larimer Nos. 3 and 4	Westmoreland Coal Company	do. do.	George R. Scull	Irwin, Westmoreland county.
Manor Shaft	F. L. Stephenson	do. do.	Samuel Furguson	Manor, Westmoreland county.
Mutual Nos. 1, 2 and 3	Mutual Coke Company	do. do.	Thomas S. Jamison	Mutual, Westmoreland county.
Mammoth Nos. 1 and 2	H. C. Frick Coke Company	do. do.	Charles B. Franks	Mammoth, Westmoreland county.
Mullin	McClure & Co.	do. do.	J. P. Brennen	Scottdale, Westmoreland county.
Mayfield	do. do.	do. do.	do.	do. do.
Madison	Madison Gas Coal Company	do. do.	Thomas Donohoe	Greensburg, Westmoreland county.
No. 1 "A" and "B" shafts	The South West Coal and Coke Co.	do. do.	William S. Ramsay	Mt. Pleasant, Westmoreland county.
No. 2	do. do. do.	do. do.	do. do.	do. do.
No. 3	do. do. do.	do. do.	Robert Ramsay, Jr.	Tarrs, Westmoreland county.
No. 4	do. do. do	do. do.	do. do.	Stoners P. O., Westmoreland county.
Ocean	Gottlieb Vogele	Allegheny county	Gottlieb Vogele	Wilkinsburg, Allegheny county.
Oak Hill No. 4	New York and Cleveland Gas Coal Co.	do. do.	T. B. DeArmit	Turtle Creek, Allegheny county.
Osceola	Osceola Coal Company	do. do.	James W. Shields	Emblem, Allegheny county.
Ocean No. 1	Youghiogheny River Coal Company	Westmoreland county	John F. Hosack	Scott Haven, Westmoreland county.
Port Royal	Port Royal Coal and Coke Company	do. do.	J. A. Brown	Fitz Henry, Westmoreland county.
Penn Gas, No. 1 shaft	Penn Gas Coal Company	do. do.	John F. Wolf	Irwin, Westmoreland county.
Penn Gas, No. 2 shaft	do. do.	do.	do.	do. do.
Penn Gas, No. 3 shaft	do. do.	do.	do.	do. do.
Penn Gas No. 4	do. do.	do.	do.	do. do.
Penn Gas, Coal Run	do. do.	do.	do.	do. do.
Penn Gas slope	do. do.	do.	do.	do. do.

TABLE I—*Continued.*

NAME OF COLLIERY.	Name of Operator.	Location—County.	Name of Superintendent.	Postoffice address.
Penn Gas drift	Penn Gas Coal Company	Westmoreland county	John F. Wolf	Irwin, Westmoreland county.
Plum Creek	New York and Cleveland Gas Coal Co.	Allegheny county	T. B. DeArmit	Turtle Creek, Allegheny county.
Robbins	Robbins Coal Company	Westmoreland county	W. A. Brandt	Robbins, Westmoreland county.
Rising Sun	McClure & Co.	do. do.	James Devlin	Mt Pleasant, Westmoreland county.
Smithton Nos. 1 and 2	Waverly Coal and Coke Company	do. do.	David Orr	Smithton, Westmoreland county.
Spring Hill Nos. 1 and 2	Spring Hill Gas Coal Company	Allegheny county	E. W. Boyd	Turtle Creek, Allegheny county.
Sandy Creek	New York and Cleveland Gas Coal Co.	do. do.	William Fisher	White Ash, Allegheny county.
Standard No. 1	H. C. Frick Coke Company	Westmoreland county	Robert Ramsay	Mt. Pleasant, Westmoreland county.
Standard No. 2	do. do.	do. do.	do. do.	do. do.
Standard slope	do. do.	do. do.	do. do.	do. do.
Shaner No. 1	Shaner Gas Coal Company	do. do.	George W. Schluederberg	Penn Building, Pittsburg.
Shaner No. 2	do. do.	do. do.	do. do.	do. do.
South Side	Westmoreland Coal Company	do. do.	George R. Scull	Irwin, Westmoreland county.
United No. 1	United Coal and Coke Company	do. do.	W. C. Reynolds	United, Westmoreland county.
United No. 2	do. do.	do. do.	do. do.	Tarrs, Westmoreland county.
Union	McClure & Co.	do. do.	J. P. Brennen	Scottdale, Westmoreland county.
West Newton shaft	West Newton Coal Company	do. do.	W. F. Allison	West Newton, Westmoreland county.
Whitney	The Hostetter Coke Company	do. do.	John T. Rush	Whitney, Westmoreland county.
West Overton	A. C. Overholt & Co.	do. do.	B. F Overholt	West Overton, Westmoreland county.
Westmoreland shaft	Westmoreland Gas Coal Company	do. do.	George R. Scull	Irwin, Westmoreland county.
Weinman	Jacob Weinman	Allegheny county	Jacob Weinman	Wilkinsburg, Allegheny county.
Youghiogheny	Ohio and Pennsylvania Coal & Coke Co.	Westmoreland county	James A. Watkins	Fitz Henry, Westmoreland county.
Yough slope	Yough Slope Gas Coal Company	do. do.	Robert H. Latmore	West Newton, Westmoreland county.

TABLE II—*Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Second Bituminous District for the year ending December 31, 1891.*

NAMES OF COLLIERIES.	Location.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Amyville	Suterville, Westmoreland county,	8,731		8,731		164				1	17		
Alexandria	Goff, Westmoreland county,	208,644	92,651	69,668	256	284	2	1	100	4	27		263
Big Chief	Robbins, Westmoreland county,	40,596.4		40,596.4	200	105	1			1	4		
Buckeye	Stauffers, Westmoreland county,	70,000	46,600		212	121				5	13		160
Bessemer and Rising Sun	Mt. Pleasant, Westmoreland county,	14,400	9,618		33	206				3	23		273
Claridge	Claridge, Westmoreland county,	7,907.2		7,907.2	56	48					2		
Carbon	Greensburg, Westmoreland county,	166,559	17,764	129,854	181	214		1		4	23		48
Calumet	Calumet, Westmoreland county,	100,000	67,000		208	214		2		6	21		225
Dilworth	Scott Haven, Westmoreland county,	48,000		48,000	198	101		1			5		
Denmark	Claridge, Westmoreland county,	203,151.75		203,151.75	280	278			150	4	16		
Donnelly Nos. 1 and 2	Stoners, Westmoreland county,	78,000	51,900		207	134			24	2	22		200
Duquesne	Wilkinsburg, Allegheny county,	82,888		82,888	226	169		1		2	12	1	
Eureka	Jacob's Creek, Westmoreland county,	83,913		83,913	245	131		3		1	2		
Emma	Hoggs, Westmoreland county,	15,276	10,362		176	28					3		36
Enterprise	Haweye, Westmoreland county,												
Greensburg No. 1	Greensburg, Westmoreland county,	121,067	4,647	120,442	254	121		1	23	1	17		10
Greensburg No. 2	do. do.	4,510		4,510		29					3		
Hempfield	do. do.	142,418		140,117	264	126		1	12		17		
Hecla No. 1 shaft	South West, Westmoreland county,	106,599.04	71,435.75		189	258				8	40		272
Hecla No. 2 shaft	Tranger, Westmoreland county,	114,748	78,154.6		196	236				6	21		500
Hazlett Nos. 1 and 2	Mt. Pleasant, Westmoreland county,	32,300	21,500		152	86				7	9		261
Hampton	Wilkinsburg, Allegheny county,	44,600		44,600	210	149					19		
Lippincott	Hostetter, Westmoreland county,	100,093.125	69,398		198	197				2	10		305
Larimer Nos. 3 and 4	Larimer, Westmoreland county,	333,296		331,554	285	399	4	5		4	31		
Larimer Coke Plant	do. do.												300
Mutual Nos. 1, 2 and 3	Mutual, Westmoreland county,	63,391.025	40,000		220	200			20	2	9		154
Mammoth Nos. 1 and 2	Mammoth, Westmoreland county,	198,731	133,855		190	470	109	2		12	31		509
Mayfield	Stoners, Westmoreland county,	33,000	21,900		207	46			7	1	6		104
Mullin	Mt. Pleasant, Westmoreland county,	38,000	25,300	572	210	72				1	7		82
Madison	Madison, Westmoreland county,	134,089		134,089		216					16		

TABLE II—*Continued.*

NAMES OF COLLIERIES.	Location.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Nos. 1, "A" and "B" shafts.	Mt. Pleasant, Westmoreland county.	427,200	271,280	. . . . .	256	741	1	2	. . . .	17	56	. .	620
No. 2.	do. do.	145,030	93,690	. . . . .	186	272	. . . .	. . . .	. . . .	2	31	. .	251
No. 3.	Tarrs, Westmoreland county, ...	117,297	74,865	. . . . .	217	230	. . . .	1	. . . .	6	21	. .	182
No. 4.	Stoners, Westmoreland county, . . .	60,870	38,896	. . . . .	201	152	. . . .	. . . .	. . . .	4	13	. .	152
Ocean No. 1.	Scott Haven, Westmoreland county.	154,427	. . . . .	154,427	260	195	. . . .	1	265	. . . .	17	. .	29
Osceola.	Osceola, Allegheny county, ...	87,911.55	. . . . .	87,911.55	202	147	1	. . . .	110	2	8	. .	. .
Oak Hill No. 4.	Turtle Creek, Allegheny county, . .	265,805	. . . . .	265,805	225	398	2	3	. . . .	4	23	. .	. .
Ocean.	Wilkinsburg, Allegheny county, . . .	5,956	. . . . .	Sold at home.	289	13	. . . .	. . . .	. . . .	. . . .	2	. .	. .
Plum Creek.	Negley, Allegheny county, ...	170,913	. . . . .	170,913	270½	195	. . . .	. . . .	. . . .	. . . .	29	. .	. .
Penn Gas No. 1 shaft.	Irwin, Westmoreland county, ...	217,919	. . . . .	213,873	246	290	2	. . . .	. . . .	5	30	. .	. .
Penn Gas No. 2 shaft.	do. do. . . .	246,905	. . . . .	241,610	244¾	312	. . . .	. . . .	. . . .	4	33	. .	. .
Penn Gas No. 4.	Sewickley, Westmoreland county. . .	15,799.50	. . . . .	15,364.50	120½	55	. . . .	1	. . . .	2	4	. .	. .
Penn Gas Coal Run.	Irwin, Westmoreland county, ...	62,004	. . . . .	60,933	240¼	89	1	. . . .	. . . .	. . . .	7	. .	. .
Port Royal No. 1 shaft.	Fitz Henry, Westmoreland county, .	38,549	19,360.65	38,549	288	105	1	. . . .	458	8	9	. .	60
Penn Manor shaft.	Manor, Westmoreland county, ...	42,900.275	. . . . .	42,900.275	139	94	. . . .	. . . .	. . . .	4	3	. .	45
Union Supply Co., Limited.	Mutual, Westmoreland county, . . .	10,752.025	. . . . .	10,752.025	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. .	. .
Robbins.	Gulley, Westmoreland county, ...	88,066.2	. . . . .	88,066.2	178	172	. . . .	. . . .	. . . .	. . . .	12	. .	. .
Smithton Nos. 1 and 2.	Smithton, Westmoreland county, . .	127,534	37,017	65,836	274	214	1	1	400	3	20	. .	117
Southside.	Irwin, Westmoreland county, ...	197,165	. . . . .	195,408	269	267	2	3	. . . .	4	20	1	. .
Shaner No. 2.	Gulley, Westmoreland county, ...	62,770	. . . . .	61,495	142¾	151	. . . .	. . . .	200	2	8	. .	. .
Standard No. 2. shaft.	Mt. Pleasant, Westmoreland county.	345,025	224,079	. . . . .	193	686	2	. . . .	. . . .	24	65	. .	905
Standard Slope.	do. do.	7,161	. . . . .	. . . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. .	. .
Sandy Creek.	Sandy Creek, Allegheny county. . . .	185,001.50	. . . . .	185,001.50	259¾	230	. . . .	1	30	2	21	1	. .
Spring Hill Nos. 1 and 2.	Walls, Allegheny county, ...	124,000	. . . . .	62,000	301	106	1	. . . .	. . . .	1	6	. .	. .
United No. 1 shaft.	United, Westmoreland county, ...	15,000	10,000	. . . . .	23	314	1	. . . .	. . . .	7	26	. .	300
United No. 2.	Tarrs, Westmoreland county, ...	124,500	83,000	. . . . .	199	259	. . . .	. . . .	. . . .	5	27	. .	301
Union.	Stoners, Westmoreland county, ...	22,000	14,400	. . . . .	209	45	. . . .	. . . .	. . . .	1	8	. .	70
Whitney.	Hostetter, Westmoreland county, . .	140,874	90,933	. . . . .	193	256	. . . .	2	. . . .	2	21	. .	302
West Newton No. 1 shaft.	West Newton, Westmoreland county, .	138,381	. . . . .	138,381	250	119	. . . .	. . . .	. . . .	4	8	. .	. .
Westmoreland shaft.	Biddle, Westmoreland county, ...	326,643	. . . . .	317,495	275	345	2	3	1,600	12	21	. .	. .
Westmoreland Car Shops.	Irwin, Westmoreland county, ...	. . . .	. . . .	. . . .	308	39	. . . .	. . . .	. . . .	. . . .	. . . .	. .	. .

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TABLE III—*Showing the number of each class of Employes at each Colliery in the Second Bituminous Mine District, during the year 1891.*

NAMES OF COLLIERIES.	Location.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand totals—inside and outside.
		Inside foreman or mine-boss.	Miners.	Miners' boys.	All company men.	Drivers and runners.	Doorboys.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Number of cokers and yard men employed.	All company men.	Superintendent, book-keepers and clerks.	Total outside.	
Amyville	Suterville, Westmoreland county,	1	125	8	3	12	3	152	1	2	1	. . .	6	2	12	164
Alexandria	Goff, Westmoreland county,	1	173	10	8	15	6	213	3	4	4	46	12	2	71	284
Bessemer and Rising Sun	Mt. Pleasant,	1	80	2	8	12	8	111	1	2	2	71	14	2	95	206
Buckeye	Stauffers, Westmoreland county,	1	58	. . .	5	7	2	73	. . .	2	1	36	7	2	48	121
Big Chief	Robbins, Westmoreland county,	1	80	10	2	4	. . .	97	1	1	1	. . .	4	1	8	105
Claridge	Claridge, Westmoreland county,	1	38	. . .	1	2	. . .	42	. . .	2	. . .	. . .	3	1	6	48
Carbon	Greensburg, Westmoreland county,	1	140	5	18	1	. . .	174	2	3	5	12	16	2	40	214
Calumet	Calumet, Westmoreland county,	1	100	. . .	7	14	2	124	3	3	3	75	4	2	90	214
Dilworth	Scott Haven, Westmoreland county,	1	80	5	3	4	1	94	. . .	1	. . .	. . .	5	1	7	101
Denmark	Claridge, Westmoreland county,	1	210	10	12	16	8	257	1	3	1	. . .	10	3	21	278
Donnelly Nos. 1 and 2	Stoners, Westmoreland county,	1	57	8	3	8	4	81	1	3	1	40	5	3	53	134
Duquesne	Wilkinsburg, Allegheny county,	1	123	16	4	7	3	154	. . .	2	2	. . .	10	1	15	169
Eureka	Jacobs Creek, Westmoreland county,	1	95	8	4	8	4	120	. . .	1	1	. . .	8	1	11	131
Emma	Hoggs, Westmoreland county,	1	10	. . .	1	2	. . .	14	. . .	. . .	. . .	8	3	3	14	28
Enterprise	Hawkeye, Westmoreland county,															
Greensburg No. 1	Greensburg, Westmoreland county,	1	74	6	4	16	2	103	1	2	2	3	8	2	18	121
Greensburg No. 2	do. do.	1	23	. . .	1	2	. . .	27	. . .	. . .	. . .	. . .	2	. . .	2	29
Hecla No. 1 shaft	South West, Westmoreland county,	1	103	2	17	22	12	157	2	3	6	76	9	3	101	258
Hecla No. 2 shaft	Tranger, Westmoreland county,	1	103	2	14	9	8	137	2	6	5	68	15	3	99	236
Hempfield	Greensburg, Westmoreland county,	1	85	3	3	14	3	109	1	3	3	. . .	9	1	17	126
Hazlett Nos. 1 and 2	Mt. Pleasant, Westmoreland county,	1	33	. . .	8	3	2	47	. . .	1	4	28	4	2	39	86
Hampton	Wilkinsburg, Allegheny county,	1	100	9	4	9	6	129	. . .	3	1	. . .	15	1	20	149
Lippincott	Hostetter, Westmoreland county,	1	105	2	10	9	4	131	1	3	4	46	10	2	66	197
Larimer Nos. 3 and 4	Larimer, Westmoreland county,	2	300	15	17	32	8	374	1	2	4	. . .	16	2	25	399
Mutual Nos. 1, 2 and 3	Mutual, Westmoreland county,	1	78	11	12	9	3	114	1	2	1	70	10	2	86	200
Mammoth Nos. 1 and 2	Mammoth, Westmoreland county,	2	190	2	28	25	13	260	3	8	10	150	36	3	210	470
Mayfield	Stoners, Westmoreland county,	1	20	2	1	4	1	29	. . .	. . .	1	14	2	. . .	17	46
Mullin	Mt. Pleasant, Westmoreland county,	1	28	. . .	3	4	. . .	36	. . .	1	1	29	4	1	36	72

Madison	Madison, Westmoreland county	1	169	13	2	14	3	202	...	3	...	...	9	2	14	216
Nos. 1 "A" and "B" shafts	Mt. Pleasant, Westmoreland county	2	289	6	61	39	13	410	2	11	13	276	24	5	331	741
No. 2	do. do.	1	110	1	9	15	6	142	1	3	3	96	25	2	130	272
No. 3	Tarrs, Westmoreland county	1	94	2	11	16	5	129	1	2	6	78	11	3	101	230
No. 4	Stoners, Westmoreland county	1	58	...	10	9	...	78	1	2	2	56	10	3	74	152
Ocean	Wilkinsburg, Allegheny county	1	11	...	...	1	...	13	...	...	...	...	...	...	...	13
Osceola	Osceola, Allegheny county	1	112	10	2	8	...	133	...	1	2	...	7	4	14	147
Oak Hill No. 4	Turtle Creek, Allegheny county	1	286	44	5	20	4	360	1	2	2	...	30	3	38	398
Ocean No. 1	Scott Haven, Westmoreland county	1	150	15	3	11	2	182	1	3	...	...	7	2	13	195
Port Royal	Fitz Henry, Westmoreland county	1	34	...	11	4	3	53	1	4	5	15	25	2	52	105
Penn Gas No. 1 shaft	Irwin Westmoreland county	1	213	5	19	21	4	263	1	3	4	...	19	...	27	290
Penn Gas No. 2 shaft	do. do.	1	224	6	11	27	8	277	1	5	4	...	23	2	35	312
Penn Gas No. 4	Sewickley, Westmoreland county	1	35	1	6	3	...	46	1	2	2	...	3	1	9	55
Penn Gas Coal Run	Irwin, Westmoreland county	1	60	2	6	6	2	77	1	3	...	...	6	2	12	89
Plum Creek	Negley, Allegheny county	1	137	15	6	15	...	174	...	2	...	...	17	2	21	195
Penn Manor shaft	Manor, Westmoreland county	1	70	2	4	3	2	82	...	1	3	...	7	1	12	94
Robbins	Robbins, Westmoreland county	1	140	8	4	8	2	163	1	1	...	...	6	1	9	172
Smithton Nos. 1 and 2	Smithton, Westmoreland county	1	130	3	10	12	5	161	1	3	2	30	15	2	53	214
Spring Hill Nos. 1 and 2	Wall, Allegheny county	1	80	7	1	5	1	95	...	1	2	...	6	2	11	106
Standard	Mt. Pleasant, Westmoreland county	2	278	13	43	31	19	386	5	8	12	252	19	4	300	686
Shaner No. 2	Guffey, Westmoreland county	1	120	2	4	8	2	137	1	2	2	...	8	1	14	151
South Side	Irwin, Westmoreland county	1	185	12	22	15	5	240	1	3	4	...	17	2	27	267
Sandy Creek	Sandy Creek, Allegheny county	1	150	23	5	14	1	194	1	4	2	...	27	2	36	230
United No. 1	United, Westmoreland county	1	140	...	10	18	9	178	1	2	6	125	...	2	136	314
United No. 2	Tarrs, Westmoreland county	1	108	3	8	18	5	143	1	6	5	95	7	2	116	259
Union	Stoners, Westmoreland	1	17	...	2	3	...	23	...	...	1	20	...	1	22	45
Whitney	Whitney, Westmoreland county	1	130	...	6	12	2	151	1	7	5	75	15	2	105	256
West Newton	West Newton, Westmoreland county	1	95	3	3	6	2	110	1	1	3	...	3	1	9	119
West Overton	West Overton, Westmoreland county	1	32	3	3	5	...	44	1	2	...	28	2	4	37	81
Westmoreland shaft	Biddle, Westmoreland county	1	250	7	26	24	6	314	1	5	5	...	18	2	31	345
Westmoreland Car Shops	Irwin, Westmoreland county	...	...	...	...	...	...	...	1	13	1	...	23	1	39	39
Weinman	Wilkinsburg, Allegheny county	1	15	2	...	1	...	19	...	...	...	...	...	1	1	20
Youghiogheny shaft	Fitz Henry, Westmoreland county	1	60	...	1	3	1	66	1	1	2	6	4	1	15	81
Yough slope	West Newton, Westmoreland county	1	85	4	2	6	1	99	...	1	2	...	4	2	9	108
Total		64	6,678	348	517	680	216	8,503	55	182	167	1,924	645	118	3,080	11,583

TABLE IV.—*List of Fatal Accidents occurring in and about the Mines of the Second Bituminous Mine District for the year ending December 31, 1891.*

Date of accident	NAME OF PERSON.	Occupation.	Age.	Widow.	Number of orphans.	Name of Colliery.	Location County.	Nature and Cause of Accident.
Jan 9.	Daniel Loughner.	Driver.	17			Southside.	Westmoreland.	Killed by falling under a wagon as he was bringing a trip of coal out of the mine.
"	Jacob Meyer.	Miner.	45	1				
"	William Bowman.	do.	27	"	"			
"	James Riley.	do.	18	"	"			
"	August Lunk.	do.	14	"	"			
"	John Eaton.	do.	14	"	"			
"	Pretz Newel.	do.	20	"	"			
"	Jesse Crum.	do.	17	"	"			
"	William Snaith.	Fire-boss.	55	1				
"	Arthur Lazzel.	Miner.		1				
"	Daniel Gorden.	do.	33	1	3			
"	John Blain.	do.	60	1				
"	W. D. Woods.	do.	23	1				
"	George Brumward.	do.	33	1				Killed by an explosion of fire-damp, carburetted hydrogen. All those men were killed by an explosion of fire-damp. That is, fire-damp was the primary cause of the disaster, but fully 75 per cent. of the men were smothered by after-damp, generated by fine coal dust. The dust was lifted by the force of the explosion and was battered against the posts and the sides of the ribs nearly an inch in thickness. The nationalities of the persons killed are as follows: Twenty-six (26) of them were Americans, Germans, Irish, Scotch and English, 2 Bohemians, 15 Poles and 68 Slavs, and it is known that they leave 27 widows and 45 orphans in this country, and there are said to be 34 widows and 71 orphans in the countries of their various nationalities.
"	John Doyle.	do.	15	"	"			
"	William Lewis.	do.	24	"	"			
"	Louis Lewis.	do.	26	"	"			
"	Thomas Brown.	do.	17	"	"			
"	James Murphy.	do.	14	"	"	Mammoth.	Westmoreland.	
"	John Van Dorn.	do.	24	"	"			
"	Martin Branon.	do.	28	1				
"	William Hunter.	do.		1				
"	John Tamase.	do.	46	1				
"	Joseph Haragosz.	do.	26	1				
"	Michael Stanik, Sr.	do.	52					
"	Michael Stanik, Jr.	do.	19	1				
"	Andrew Berko.	do.	35	1				
"	John Klimko.	do.	40	1				
"	Stephen Rusnak.	do.	19	"	"			
"	John Olenik.	do.	19	"	"			
"	Stephen Svatz.	do.	36	1				
"	John Figlar	do.	25	1				
"	John Novotin.	do.	23	"	"			
"	Stephen Svatz.	do.	21	"	"			
"	Stephen Svatz.	do.	24	"	"			
"	Michael Salaj.	do.	23	"	"			

27.	Andrew Salaj.	do.	18	S.						
27.	John Baran.	do.	20	S.						
27.	Matthew Filip.	do.	40	1						
27.	George Peglar.	do.	40	1						
27.	Stephen Placko.	do.	37	1						
27.	Michael Kohaeak.	do.	27	S.						
27.	Valentine Kozar	do.	32	S.						
27.	John Zavatyky.	do.	35	1						
27.	John Saska.	do.	30	1						
27.	Michael Rolincyk	do.	37	1						
27.	Jacko Svetz.	do.	42	1						
27.	Mathew Tribular.	do.		1						
27.	Anton Szwac.	do.		1						
27.	Marcin Liptak.	do.	20	S.						
27.	Valentine Liptak.	do.	38	1						
27.	Jacob Zywcysk.	do.	18	S.						
27.	Sebastian Szwcysk.	do.	19	S.						
27.	Michael Podracki.	do.	19	S.						
27.	Stephen Balluch.	do.	28	1						
27.	Stephen Samtrik.	do.	27	1						
27.	John Uhryn.	do.	19	S.						
27.	George Hanio.	do.	23	1						
27.	George Naxot.	do.	29	1						
27.	John Hartosz.	do.	23	1						
27.	Michael Stanko.	do.	40	1						
27.	Anton Dzuryszyn.	do.	27	1						
27.	Stephen Komarz.	do.	25	S.						
27.	Stephen Hoven.	do.	22	S.						
27.	Andrew Szczawnicky.	do.	29	1		Mammoth.	Westmoreland.			Killed by an explosion of fire-damp, carburetted hydrogen. All these men were killed by an explosion of fire-damp. That is, fire-damp was the primary cause of the disaster, but fully 75 per cent. of the men were smothered by after-damp, generated by fine coal dust. The dust was lifted by the force of the explosion and was battered against the posts and the sides of the ribs nearly an inch in thickness. The nationalities of the persons killed are as follows: Twenty-six (26) of them were Americans, Germans, Irish, Scotch and English, 2 Bohemians, 13 Poles and 68 Slavs, and it is known that they leave 27 widows and 45 orphans in this country, and there are said to be 34 widows and 71 orphans in the countries of their various nationalities.
27.	Matthew Szczawnicky.	do.	24	1						
27.	Andrew Onufer.	do.	21	S.						
27.	Istvan Jaesko.	do.	31	1						
27.	Lucas Jaszczur.	do.	30	1						
27.	Anton Yryc.	do.	33	1						
27.	Michael Matuszczak.	do.	35	S.						
27.	John Dufalo.	do.	25	1						
27.	Charles Cole.	do.	45	1						
27.	Henry Burchell.	do.	33	1	3					
27.	Gerhard Hilson.	do.	30	1						
27.	Peter Schwingen.	do.	39	1						
27.	Anton Hosek.	do.	28	1						
27.	Francis Erny.	do.	14	S.						
27.	Valentine Wachsmanski.	do.	25	1						
27.	Joseph Zagata.	do.	26	S.						
27.	Michael Zagata.	do.	24	S.						
27.	John Koziel.	do.	30	S.						
27.	Michael Witch.	do.		1						
27.	John Witch (son of above).	do.	19	S.						
27.	Francis Kijewski.	do.	16	S.						
27.	Mathias Kijewski.	do.	14	S.						
27.	Ludwig Gronski.	do.	23	S.						
27.	Stanislaus Wyrwinski.	do.	23	S.						
27.	Jacob Swec.	do.	23	1						
27.	Joseph Swec.	do.	30	1						
27.	Michael Kosynski.	do.		1						
27.	Michael Gustik.	do.		1						
27.	John Beny.	do.		1						

TABLE IV— *Continued.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married or single.	No. of orphans.	Name of Colliery.	Location-County	Nature and Cause of Accident.
Jan. 27.	John Darai.	Miner.	..	1	..			
27.	Stephen Okular,	do.	..	..	..			
27.	Joseph Depta.	do.	20	S.	..			
27.	John Kune.	do.	..	1	..			
27.	Nicholas Panko.	do.	42	1	..			
27.	Andrew Varchol.	do.	26	1	..			
27.	Michael Zurco.	do.	32	S.	..			
27.	John Dzudzisk	do.	30	1	..			
27.	Valentine Likora.	do.	38	1	..	Mammoth.	Westmoreland.	Killed by an explosion of fire-damp, carburetted hydrogen. All these men were killed by an explosion of fire-damp. That is, fire-damp was the primary cause of the disaster, but fully 75 per cent. of the men were smothered by after-damp generated by fine coal dust. The dust was lifted by the force of the explosion and was battered against the posts and the sides of the ribs nearly an inch in thickness. The nationalities of the persons killed are as follows: Twenty-six (26) of them were Americans, Germans, Irish, Scotch and English, 2 Bohemians, 13 Poles and 68 Slavs, and it is known that they leave 27 widows and 45 orphans in this country, and there are said to be 34 widows and 71 orphans in the countries of their various nationalities.
27.	Nicholas Luchy.	do.	34	1	..			
27.	Bartholemew Wojtosz.	do.	31	1	..			
27.	Jacob Congva.	do.	26	S.	..			
27.	Simon Hamaczyk.	do.	19	S.	..			
27.	Stephen Janicko.	do.	40	1	..			
27.	Andrew Hlovac.	do.	20	S.	..			
27.	Patrick Tumelty.	do.	17	S.	..			
27.	Stephen Rymbala.	do.	19	S.	..			
Feb. 3.	Michael Zoworcsak.	do.	30	1	1	Westmoreland shaft.	Westmoreland.	Zoworsak, a Hungarian miner; he had not been in the mine but a short time; he was killed by a fall of slate; on investigation I discovered that he did not have a sufficient number of props under the slate to secure it against falling; he had posts close at hand, if he only had used them.
20.	Jacob Williams.	do.	35	1	2	Penn shaft No. 1.	do.	Williams was a Polander and only had been in this country a short time, and he leaves a widow and two children in Poland; he and some others had come to the shaft bottom to go out, and by some means he got under the cage and was instantly killed; the coroner held an inquest and the coroner's jury rendered a verdict of accidental death.
Mar. 26.	Thomas Mitchell	do.	35	1	..	Larimer No. 4.	do.	Mitchell was an American miner; he had his leg and collar-bone broken, and was injured internally; he was taken to the West Penn Hospital and died there on April 14th; an inquest was held by Coroner McDowal and a verdict of accidental death was rendered.
April 11.	John Fearns.	do.	67	..	..	Alexandria mine.	do.	Fearns was an Irish miner, his breastbone was crushed by a fall of coal; he was lying down holeing under the coal, and he did not have the coal spragged as he should have had in order to protect himself; he died the following day; the coroner held an inquest and a verdict of accidental death was rendered.

Ma 23.	Scrozzion Dominico, . . .	Miner, . . .	40	1	. .	Smithton No. 1, ...	Westmoreland,	Dominco was an Italian miner, had a wife and family in Italy; he had mined coal for two months, and he was killed by a fall of slate; it appears that he had been knocking a post out when the slate fell; the coroner held an inquest, and after examining several witnesses, a verdict of accidental death was rendered.
June 1.	John Enhaus, ...	do. . . .	35	1	4	Standard No. 2 shaft, . .	do.	Enhaus was a Hungarian miner, and he had a wife and four children in Hungary; he came to the shaft bottom to get a light, and instead of going on the other side of the shaft through the manway, he walked right under the cage and was instantly killed by it when descending.
3.	John Kuntz, ...	do. . . .	45	1	. .	Spring Hill, ...	Allegheny, . . .	Kuntz was a Polander, he had only been in the mines a short time before the accident; he was killed by a fall of slate; he had no post under it and was killed through ignorance of the nature of the slate; the coroner held an inquest and rendered a verdict of accidental death.
30.	Hugh Anderson, ...	do. . . .	55	1	5	Osceola mine, ...	do.	Anderson was a Scotch miner; he was fatally injured by a fall of slate and died in five hours; he had two posts set under the slate, but they were not enough, considering the nature of the slate, and Anderson should have known that, because he was an old miner; the coroner held an inquest and a verdict of accidental death was rendered.
July 9.	John Kaminskea, ...	do. . . .	41	1	2	Westmoreland shaft, . .	Westmoreland,	Kaminskea was a Polander, he had only been in the mine a short time; he was killed by a fall of slate, the assistant mine-boss had told him to set a post under the slate, his little boy had also pointed out to him the loose nature of the slate, but it seems that he would not take any warning and his death was the result.
27.	Edward Goff, ...	Laborer, . .	41	1	8	United No. 1 shaft, . . .	do.	Goff was an Englishman; at the time of the accident he and seven others had gotten on the cage to come up the shaft there was no cover on the cage, they were using it for taking timber down the shaft, and some one threw a block of wood carelessly on the landing and it fell down the shaft and killed Goff instantly.
Aug. 7.	John Smith, ...	Miner, . . .	35	1	2	Port Royal No. 1 shaft, .	do.	Smith was a Polander; he was instantly killed by a fall of slate; he did not have the slate properly posted at the time of the accident, the coroner held an inquest, and the jury rendered a verdict of accidental death.
18.	John Demster, ...	do. . . .	59	1	8	Coal Run mine, ...	do.	Demster was a Scotchman; he was severely injured by a fall of slate while drawing a rib and he died on September 8th.
22.	John W. Woods, ...	Laborer, . .	19	S.	. .	Oak Hill No. 4 mine, . . .	Allegheny, . . .	Woods was an American, and as he was dropping cars from the tipple he fell between the cars and was crushed to death; the coroner held an inquest and the jury rendered a verdict of accidental death.
28.	Nickola Buczer, ...	Miner, . . .	26	1	3	Larimer No. 4 mine, . . .	Westmoreland,	Buczer was a Hungarian miner and had a wife and three children in Hungary; he was killed by a premature blast; he did not get away but a short distance from the shot, and he was struck on the head by a lump of coal, causing his death in three hours.
31.	John Barbery, ...	do. . . .	32	1	. .	Big Chief mine, ...	do.	Barbery was an Italian miner; he knew but little of the dangers encountered in mining or he would not have gone under the slate to knock the post out; three tons of slate fell on him crushing his life out.

Sept.	5.	John Ayers.	Miner. . . .	22	S.	. .	Larimer No. 4 mine. . . .	Westmoreland.	Ayers was an American miner; at the time of the accident he was drawing posts out in a rib; there was a miner by the name of John Smith working with him at the time. Smith had told him not to go back after the post, but Ayers paid no attention to him and went back, and he was instantly killed by the falling roof, and it took some time to get him out from under the fall.
Oct.	20.	Lewis Brock.	do. . . .	29	1	2	Larimer No. 4 mine. . . .	do.	Brock was an Italian, and he leaves a wife and two children in Italy, he had his brains crushed out by a fall of slate; he had the slate posted but he did not use the proper judgment in setting the post under the slate.
Nov.	5.	James Steel.	do. . . .	73	1	. .	Oak Hill No. 4 mine. . . .	Allegheny. . . .	Steel was an American miner; he was going to his work in the morning and a driver came up behind him and drove the mule and water wagon right over the old man. The driver stated that he did not see him; the driver was going very fast at the time. Steel's shoulder blade was broken and he was injured internally, and he died twenty-four hours after the accident; the coroner held an inquest and the jury rendered a verdict of accidental death.
	20.	William Blubaker.	do. . . .	17	S.	. .	Youghiogheny shaft. . .	Westmoreland.	Blubaker was an American; he was working with an older brother; he was standing a short distance back from the face when a fall of coal knocked a post out striking him on the head fracturing his skull, causing his death in two day's after.
	27.	Peter Kearney.	do . . .	78	1	. .	Alexandria mine.	do.	Kearney was an Irish miner; at the time of the accident he was riding to his work in a wagon on the dilly road and as he was about to get out of the wagon he struck his head against a post and fell between the wagon and the rib, and was fatally injured and died on the 30th.
Dec.	2.	John Coyle.	do. . . .	41	1	1	South Side mine.	do.	Coyle was an Irish miner; he was instantly killed by being struck on the temple by a post as he was taking them out in an entry stump.
	6.	George Tropke.	do. . . .	47	1	2	Standard No. 2 shaft. . .	do.	Tropke was a Hungarian miner; he was instantly killed as he was taking posts out of a rib; the man who worked with him warned him not to go back after the post, but he paid no attention to him and was buried under the fall.
	8.	Ignatus Madur.	do. . . .	35	. .	. .	Penn Gas No. 1 shaft. . .	do.	Madur was a German miner; he was fatally injured by a fall of slate and died in a few days; he had very little knowledge of the danger encountered in mining.
	8.	John Shultz.	do. . . .	35	S.	. .	Southwest "B" shaft. . .	do.	Shultz was a Polander; he was instantly killed by a fall of roof coal and slate as he was taking posts out in a rib.

TABLE V.—*List of Non-Fatal Accidents occurring in and about the Mines of the Second Bituminous Mine District, for the year ending December 31, 1891.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
Jan. 15.	Joseph Sofrouko.	Miner.	36	M.	Mammoth mine,	Westmoreland.	Hip dislocated by a fall of slate.
24.	Antoug Russ.	do.	45	S.	Smithton No. 1 mine.	do.	Leg broken by a fall of slate.
26.	Nad Yanus.	do.	29	M.	Larimer No. 4 mine.	do.	Foot crushed, necessitating amputation.
26.	John Wercimak.	do.	28	S.	do. do.	do.	Stuck a pick in his leg.
26.	Alexander McClain.	do.	38	M.	Greensburg mine,	do.	Flesh lacerated by a fall of coal.
27.	Stephen Youdorf.	do.	27	S.	Whitney mine	do.	Leg broken, and internally injured by a fall of slate.
Feb. 14.	Jeff Lewis.	Driver.	33	S.	Larimer No. 4 mine,	do.	Leg broken by being caught between wagons.
16.	Michael Milks.	Miner.	38	S.	do. do	do.	Arm broken by a fall of slate.
18.	George Beattre.	Cager.	. .	S.	Youghiogheny shaft.	do.	Foot squeezed by the cage.
27.	Thomas Furguson.	Miner.	50	M.	Ocean No. 1 mine.	do.	Foot crushed, necessitating amputation.
March 4.	Edward Ranzen.	do.	38	M.	Eureka mine.	do.	Face cut by a fall of slate.
21.	David W. Crawford.	do.	40	M.	Oak Hill No. 4 mine.	Allegheny.	Leg fractured by a fall of roof coal.
April 1	Isaac Roebuck.	Driver.	25	S.	do. do.	do.	Arm fractured between wagons.
4.	Eavan Hawkins.	do.	24	M.	Carl on mine.	Westmoreland.	Arm broken by being caught between wagons.
8.	William Hunt.	Miner.	50	M.	Westmoreland shaft.	do.	Leg and collar bone fractured by a fall of slate.
11.	Charles Eriecson.	do.	37	S.	Alexandria mine.	do.	Both legs broken, one of them in two places, by jumping in a trip of wagons while in motion.
15.	Anthony Downa.	Driver.	22	S.	Oak Hill No. 4 mine.	Allegheny.	Leg crushed between wagons, necessitating amputation; reckless driving was the cause.
May 20.	Charles Roff.	Miner.	39	M.	Youghiogheny shaft.	Westmoreland.	Arm broken between wagons at the bottom of the shaft.
29.	James Miller.	Trapper boy.	15	S.	Whitney mine.	do.	Leg crushed by a loaded wagon, necessitating amputation.
June 5.	David Goodman.	Driver.	16	S.	Mammoth mine.	do.	Ankle dislocated by slipping between the loaded wagons.
23.	T. C. Thompson.	Trapper boy.	13	S.	South Side mine.	do.	Leg broken by jumping on the wagon in the dark.
July 6.	George J. Jewell.	Miner.	63	M.	Dilworth,	do.	Severely injured by a fall of slate.
6.	Joseph Zayers.	do.	. .	. .	Larimer No. 3 mine.	do.	Severely injured by a fall of slate.
18.	William Kirtley.	do.	13	S.	Sandy Creek mine.	Allegheny.	Leg broken by a fall of slate.
18.	George Bell.	do.	38	M.	Hempfield mine,	Westmoreland.	Collar bone broken by a fall of coal.
August 9.	Michael Shay.	do.	27	S.	South Side mine.	do.	Two fingers badly crushed by a fall of coal.
10.	John Hermedy.	Driver.	16	S.	Duquesne mine.	Allegheny.	Arm crushed by falling under a wagon and the wheel passing over it, necessitating amputation.
27.	Jacob Sowar.	do.	30	M.	"A" No. 1 shaft, S. W. C. Co.	Westmoreland.	Leg broken by falling between wagons.
Sept. 4.	Joseph Crigelwic.	Miner.	33	M.	Eureka mine.	do.	Leg broken by a fall of coal.
18.	Thomas Hough.	Laborer.	15	S.	do.	do.	Leg broken by jumping on the wagon at the tipple.
Oct. 17.	George Storrey.	Miner.	17	S.	Westmoreland shaft.	do.	Arm broken by falling over a lump of coal.
Nov. 10.	Edward Jeriad.	Dilly rider.	25	M.	"B" No. 1 shaft, S. W. C. Co.	do.	Shoulder dislocated by being thrown across the wagon.
Dec. 5.	Andy Greiman.	Driver.	28	S.	Calumet shaft.	do.	Had two ribs broken by being kicked by a mule.
8.	Andy Marniko.	. . . . .	28	M.	do.	do.	Small bone of arm broken and wrist dislocated.
24.	E. E. Tarr.	Driver.	31	M.	South West No. 3 shaft.	do.	Ankle bone broken by being caught between wagons.
28.	Barney Keenen.	Miner.	25	S.	Penn Gas No. 4 mine.	do.	Finger cut off by falling slate.
28.	Florence Shay.	do.	41	M.	South Side mine.	do.	Knee badly crushed by a fall of slate.
29.	William Gregg.	do.	40	M.	Westmoreland shaft.	do.	Back and loins injured and some ribs broken by a fall of slate.

THIRD BITUMINOUS DISTRICT.

(ARMSTRONG, BUTLER, CLARION, INDIANA, JEFFERSON, LAWRENCE, MERCER AND WESTMORELAND COUNTIES.)

Honorable THOMAS J. STEWART, *Secretary of Internal Affairs:*

SIR: I herewith submit my annual report of the inspection of mines in the Third bituminous coal district for the year ending December 31, 1891.

There were eight persons fatally, and thirty-four non-fatally injured at the mines in this district during the year, showing an increase in the former of three, and in the latter of five, but when we compare them with the tonnage (increase 425,651 tons), and the number of employes (increase 676) this year over that of last, the increase is not so great. In briefly reviewing this year's fatalities, I would state that Mr. Craig's death was due to carelessness. He knew that the coal that fell upon him was very loose, because a few minutes prior to the accident he had told his younger brother of the dangerous condition of the mined coal, consequently it was very reckless in him to be mining in front of it. Whether or not Pallano's death was due to carelessness I cannot positively state, as he was an Italian and possibly did not understand the instructions given to him by the assistant mine-boss how to protect himself while blasting down the roof, but all the evidence taken at my investigation showed that he had some knowledge of the instructions given to him by said official, and that he had been engaged at similar work in this mine before the accident; had done it satisfactorily to his employers and with safety to himself, and had he heeded the advice given he need not have been killed, as the kind of work he was to perform was not what would be termed dangerous. James N. Rossi, the other Italian who was killed by the same fall of roof which fatally injured Pallano, had no business where he was not engaged at the work of taking down the roof. He was employed as a pumper and having some leisure time he was merely visiting the other Italians and was sitting on the floor right under the roof when it fell. The boy, Ditch, disobeyed the company's rules in using carbon oil and carrying it on his person until his clothing was completely saturated with it; then as happened it only required the flame of his lamp to set his clothing on

fire. Before his clothing could be removed he was fatally burned. Andrew Bartz also received his injuries through disobedience of the express orders of the mining-boss who had instructed him to secure the "slate" some time before the accident happened. The cases of Hays and Newell were different from the others, as such accidents are almost unavoidable. These two miners were careful workmen and from the appearance of their working places they had used ordinary care. The boy, Mariacher, was entirely too young to be permitted by his father to work on a "loose ended" pillar and to be working in front of such loose coal. In fact, the father should never have allowed his boy to be working in such a dangerous place. In these accidents sixty-two and one-half per cent. of them were avoidable by using ordinary care. This is certainly too great a sacrifice of human life if anything can be done to lessen it. In my opinion much can be done by the mine officials to mitigate this great loss of life. The miner's working places should be visited frequently and they should be urged to employ the ordinary safeguards to protect themselves, as there can be no doubt that much good would be accomplished by this means. If the mine-bosses, while making their visitations every alternate day to each working place of the mine as the law directs, would talk to them and show that he had some interest in their welfare by pointing out the dangers they are subject to and suggest the proper safeguards to be applied, I am confident the results would be very satisfactory. How many of our mine-bosses do such things? and how many of our mine superintendents visit the working places of the miner? I am afraid too few of our mine officials look upon this matter in a humane and proper spirit. Unless the workmen and mine officials conscientiously realize the great responsibility they owe to one another, their families, their employers, and to the state, fatalities will not decrease as rapidly as they should. The mine Inspector has an important mission to perform in lessening the loss of human life. What is that mission? Is it running into a mine and through the main passage ways, measure the air current at face of each entry or heading, notice the system of ventilation and drainage and then set sail for the outside of the mine? Oh, no! this should not be the measure of the mine Inspector's responsibility. While such methods of inspection might be conducive in a reasonable degree to the health of the working men, it is certainly not the most efficient method to employ in contributing his share toward the saving of life. The inspector, as well as the mine officials, should realize the great responsibility resting upon him, and to make his services more efficient in the direction indicated, it should be his duty to visit the several working places of the miners in every mine of his district and become, in a measure, acquainted with them. He must show each and every one that he has an interest in his welfare. After friendly relations are formed with the workmen, and their friendship and confidence gained,

the Inspector is in a much better position to suggest and urge them to employ the necessary safeguards for their protection. If these suggestions were carried out in the right spirit by all the officials named, the miner's vocation could be made reasonably safe. If such an idea is to be carried out on the part of the Inspector, the state must not expect him to do impossibilities by requiring him to visit each mine four times a year, as the present mining act now requires.

The following table gives the number and the different classes of accidents:

CAUSES OF ACCIDENTS FOR 1891.	Fatal.	Non-fatal.
By falls of roof,	5	7
By falls of coal,	2	10
By mine wagons,	. . .	12
By miscellaneous causes,	1	5
Totals,	8	34

While the state is doing much to insure healthful places in which the miners can perform their work, they, by their own actions, are doing everything in their power to make the atmosphere of the mine unfit to be inhaled by either man or beast. In making such a statement I have reference to the quality of oil being burned by the workmen in the mines. The miners in too many instances are allowing themselves to be made the dupes of unscrupulous men who make a business of selling a quality of oil which is unfit to be burned in any mine. This cheap oil is recommended by the dealers to the miners as pure lard or pure cotton-seed oil, while it is really a mixture of carbon oil, refuse of lard and cotton-seed and other cheap oils. It is an outrage for miners to buy such stuff, knowing that they are injuring their health by its use. They should be compelled to burn nothing but pure lard oil or the purest of the cotton-seed oil. An amendment to the mining law prohibiting the use of impure oil in the mines is absolute necessary.

All the mines in the district have been visited frequently during the year and with but few exceptions they are all in a very satisfactory condition.

This has been a fairly prosperous year in the coal mining industry of the district which is very evident from the increase in the coal tonnage, etc. There has been some broken time at many of the mines, yet on the whole they have been operated very steadily and the business of the coal operators has not been interrupted by labor troubles.

These statistics are compiled from the mine operators' annual report:

Number of mines now in operation in the district,	71
Number of inside employes,	5,339
Number of outside employes,	779
Total number of employes,	6,118
Number of tons (2,000 lbs. each) of coal produced,	3,361,550
Number of tons (2,000 lbs. each) of coal shipped,	3,119,894
Number of tons (2,000 lbs. each) of coke manufactured,	147,897
Number of tons of coal produced per fatal accident,	420,193+
Number of tons of coal produced per non-fatal accident,	98,869
Total number of days the mines were in operation,	15,720
Average number of days for 64 mines that were in operation over one hundred days this year,	240 7/10

I send with this report two photographic views of Star mine No. 2, which is located in Clarion county. The usual tables and description of the mines will also be found in another part of this report

All of which is respectfully submitted.

THOMAS K. ADAMS,
Inspector.

DESCRIPTION OF MINES.

Mines in Armstrong and Clarion Counties Situated on the Allegheny Valley Railroad.

There are ten mines in operation along this railroad, but the greater number of them are of small capacity. Glen is a small operation, only giving employment to about twenty-six employes. The ventilation is still being produced by natural forces. The quantity of air in circulation was about double the amount required by the ventilation act.

In Kittanning mine there are about thirty persons employed, and at date of last visit there was an average quantity of air in circulation near face of workings of 19,000 cubic feet. The mine had not been operated very steadily during the year. The workings were in a healthful and safe condition.

Gosford mine is not of much importance owing to the coal territory being of small extent and but few persons were employed. At date of last visit the drainage was defective and the ventilation would have been much better if the details of the ventilating system had been attended to.

Rimerton is a small mine. The drainage on part of main hauling road was becoming defective but the ventilation was good. The inclined plane outside, over which the product of the mine is conveyed to the tipple is in very poor condition.

Riverview is now the largest mine in this part of the district. The company shut down the mine for four or five months during the year for the purpose of making extensive repairs. A new tipple has been built, a double-tracked inclined plane on an angle of thirty-seven degrees and 600 feet long has been constructed, a new drift mouth or entrance into the mine has been made. A new haulage road from drift mouth to the inside works for the purpose of introducing the tail-rope system of haulage is about completed. The contemplated improvements to the ventilating system at date of my last visit had not yet been completed, consequently the ventilation was not what it should have been in some parts of the mine.

Monarch mine at date of last visit was in very good condition. I measured more than a lawful quantity of air in circulation at face of works.

Mineral Ridge mine was well ventilated and drainage good.

Hardscrabble mine was not in operation at date of the last two visits, but it seemed to be in very fair condition.

Church Hill is a small operation. Had not enough air in circulation, but an air shaft had just been sunk, at which the company intend building a furnace which will afford ample ventilation for such a mine.

Mines located on Low Grade Division and Sligo Branch of the Allegheny Valley Railroad.

There are ten mines situated on this railroad. Oak Ridge No. 1 or what is known as the old drift was up to the requirements of the law in regard to ventilation and drainage. The company operating Oak Ridge mine has opened two more new ones about a half mile west of the old works. One is opened in the Lower Freeport coal bed and the other in the Upper Freeport seam, directly over the workings of the lower mine. There is an intervening thickness of strata of about sixty feet between the two coal seams. These new works are connected with the old mine tipple by an inclined plane of about seven thousand four hundred feet in length. The plane is only single track and the cable used on it is seven-eighths of an inch thick, steel wire. The grade up the plane from tipple for 4,100 feet in length is two feet in one hundred. Beyond this point and over a trestle work of three hundred feet in length the grade is three and one-half feet in one hundred and from thence to the upper part of plane to lower seam the grade is seven and seven-tenths feet in one hundred. The yard or siding for the lower seam is three hundred feet long with a grade of two feet to the one hundred. The plane connecting the upper with the lower coal seam is one thousand feet long and has a grade of six feet to the one hundred. The siding at upper seam has a grade of two feet to the one hundred and is three hundred feet in length.

The mine wagons used at these mines have wheels sixteen inches in

diameter; weight of said cars is twelve hundred pounds and they hold about two tons of coal each. Weight of steel rails to the yard 30 pounds. The road bed of plane is a substantial one and it is the intention of the managers of the mine to run thirty mine wagons on each trip. The rope is guided around the sharp curves on plane, by metal sheaves, eight feet apart, set on an angle and on metallic frames. The upper flanges of the sheaves are ten inches, and the lower or inner flanges about three and one-half inches. These sheaves stand between nine and ten inches high above the ties. The rollers are placed about twenty feet apart on the plane its whole distance. The empty trip of cars is hauled up the plane by a pair of engines of 40 horse power each, but one engine has power sufficient to do the work, and when the mine becomes extensive the power of one of the engines will be utilized to haul the coal from the mine. The drums are eight feet in diameter, lagged with four inch oak lagging and have flanges twelve inches in depth. The clutch on machine is worked by a screw; a long-pointed indicator which shows the position of the trip of cars on the plane is also worked by a screw-rod attached to the drum shaft. The mechanical work in building the engines was done by Frank Baker, son of the mine superintendent (J. C. Baker). The engines rest on a substantial foundation of masonry.

A six-foot ventilating fan has been put in position at the upper mine which will afford ample ventilation.

At Fairmount mine No. 4 there has been erected a ventilating fan six feet in diameter which produces about 30,000 cubic feet of air per minute, but much of this quantity is lost through leakage before it reaches the face of works. The tail-rope system of haulage has been introduced at this mine during the year. The product is being hauled by said system for a distance of 2,050 feet and this distance will have been increased ere now.

At Fairmount mine No. 2, another six-foot fan has been erected, thus making two in use at mouth of same opening which are made to ventilate both mines. The quantity of air in circulation at both places is 29,000 cubic feet. The workings in both openings are in a very healthful and safe condition.

In Star mine No. 2 the tail-rope system of haulage has been extended from a distance of 1,700 feet to 2,400 feet, and they intend to further increase the length of same another 1,000 feet. Owing to several new openings having been made and the proposed system of ventilation not having been completed at date of last visit, the ventilation was not as good as it will be in the near future; however, there was a fair supply of air circulating in the mine. A great many difficulties have been encountered at this mine owing to the irregularity of the coal seam which has proved very expensive to overcome.

Avondale, Keystone, Diamond and Cherry Run mines were all in very fair condition. At the Acme mine a substantial furnace has been built

STAR MINE, NO. 2.

which is producing plenty of air. The ventilation is conducted to face of the entries in good shape, and in general the mine is in splendid condition. The furnace at Brier Ridge mine has been reconstructed and is now doing good work. Owing to making a change in the ventilating system the air was not as strong at face of works as it should have been. The mine was somewhat wet and muddy but this defect has been remedied. The tail-rope system of haulage is being introduced at this mine.

Mines Situated at Reynoldsville, Jefferson County.

There are five mines at Reynoldsville, four (Big Soldier Run, two openings, Sprague, New Hamilton and Pleasant Valley) of which are operated by the Bell, Lewis and Yates Coal Mining Company, and the other (Standard) by Cant Bros. At the Sprague a six-foot fan and a substantial furnace produce the ventilation. The total quantity of air in circulation is about 56,000 cubic feet. The mine is well ventilated and in good condition generally. Pleasant Valley mine was well ventilated as there was in circulation about 20,000 cubic feet of air per minute. This mine will be exhausted in a few months. Big Soldier Run mine—There are three six-foot fans for producing the ventilation at the two openings in connection therewith. The workings of both places are kept in a healthy condition by having distributed therein about 47,000 cubic feet of air per minute. The New Hamilton mine was not in operation at date of last visit. The Standard is a new operation (drift opening). A six-foot fan is the ventilating power, producing 13,000 cubic feet of air per minute. The coal seam is very faulty in this mine and the miners are required to exercise great care in timbering to keep themselves safe.

Mines in Mercer and Butler Counties situated on the Pittsburg, Shenango and Lake Erie Railroad.

There are twelve mines in operation in this region. They have all been running very steadily during the year,

Karns is operated on a small scale and is only giving employment to about 15 persons. When last examined it was found in very poor condition. I measured 4,500 cubic feet of air per minute in circulation.

Keister.—The condition of this mine has been very much improved during the year. The air courses have been enlarged and ditches kept clean, thereby insuring better ventilation and drainage. The quantity of air in circulation in mine, at last visit, was about 8,000 cubic feet per minute.

Gomersal mine was not in operation at date of last visit, but on examining the workings it appeared that the air current was too far from face of the entries to insure good ventilation. I measured about 9,700 cubic feet of air at the furnace, and had this amount been properly conveyed to face of works it would have been sufficient.

Allegheny and Turner mines were well ventilated and in very good condition generally. I measured 9,500 cubic feet of air in the former and 7,000 cubic feet in the latter which was sufficient to ventilate such mines.

Barner mine has not been in operation steadily during the year. At date of last visit the mine was not well ventilated, but a ten foot fan had been purchased and is on the ground at mine ready to erect, which, if put in operation, will produce plenty of air.

Black Diamond, as usual, is in very good condition. I measured about 19,000 cubic feet of air in circulation, which was well distributed to the face of works. The drainage of the mines was very fair.

Black Diamond No. 2, which was formerly Trout mine, resumed operation during the year. Although the air current was well distributed to face of workings, the quantity was not sufficient, after making allowance for leakage. The drainage of the mine was very fair.

Hallville is a new slope opening operated by Evan, Morris & Co. An air shaft has been sunk, but the ventilating power has not yet been erected. I measured 9,600 cubic feet of air, being produced by natural means, and found the mine well ventilated but the weather was very favorable for ventilating purposes.

Spears.—This mine has not undergone much improvement since my last yearly report. I measured about 6,400 cubic feet of air in circulation which was fairly distributed to the working places, wherein about 40 miners are employed.

Sharon mine was in excellent condition both in regard to ventilation and drainage. Total volume of air in circulation was 12,900 cubic feet, which was over 200 cubic feet to each employe.

At Chestnut Ridge mine an air shaft has been sunk near the face of the works, on the north side of main shaft. Although there was 10,600 cubic feet of air in motion, owing to the excessive leakage caused by having so many doors in use to guide the current, not much of it reached the face of the entries.

Pardoe mine.—The fan was not running at this mine at date of last visit as the boiler that generates the steam to run it was undergoing repairs, however, a fair current was being produced by natural means. This is one of the most difficult mines to drain properly and to operate profitably in the district owing to the excessive irregularity of the coal seam and the large quantity of water being continually produced.

Other Mines Located in Mercer County.

Stoneboro' No. 2 is probably the oldest mine in the district, the workings thereof being about one and one-half miles from mouth of slope, consequently the hauling roads are long, and as the mine is very wet it is expensive to keep them in proper repair. Some parts of the roads are wet and muddy especially is this the case in the rainy seasons of the

year. The quantity of air measured at furnace was 17,200 cubic feet per minute but owing to so many old workings being left open, thereby allowing large quantities of carbonic acid gas to escape, the atmosphere of the mine was not very pure although there is usually a fair current of air moving in the main passage thereof.

Stoneboro No. 3 is a comparatively new mine and the ventilation is very fair. I measured at last visit about 11,000 cubic feet of air circulating throughout the main portions of the mine. The drainage is fair when the pumps are in working order.

Carver mine is in good condition. I measured 15,000 cubic feet of air at inlet which was distributed fairly well to face of headings. The drainage was reasonably good.

At Ormsby slope there are not many miners employed. I measured about 10,800 cubic feet of air in circulation which afforded ample ventilation. Some of the roads of the mine are wet and muddy.

At Shenango shaft 14,800 cubic feet of air was measured which was being conducted to the face of the works which gave good air to the seventy miners employed in the mine. The mine is wet but drainage reasonably good.

Lackawannock shaft was in splendid condition both as regards ventilation and drainage.

Mines Located in Beaver and Lawrence Counties.

There are nine mines situated in these two counties.

Beaver Falls mine was not in operation during either of the two visits I made to it but I examined the mine and found it in reasonably good condition.

At Baker mine there was a volume of air in motion of 8,500 cubic feet, 6,250 feet of which was fairly distributed to the face of the works. I found one of the entry roads wet and muddy but the other parts of the mine were very well drained.

In Sterling mine I measured 13,360 cubic feet of air in circulation well conducted to face of headings. General condition of mine was good.

Connelton mine is a small operation, and the company is just mining out blocks of coal that were left in an old abandoned mine. Owing to the honey-combed condition of the old works it is a very difficult matter to get the air current up to where the miners are working, however, a fair volume of air is maintained in the workings of the mine.

Beaver mine was in good condition, both as regards ventilation and drainage; when last examined there was 14,000 cubic feet of air in circulation near face of works which was being produced by a fan eight feet in diameter instead of the old six-foot furnace.

At Clinton mine the old workings thereof were fairly ventilated but the workings in the new opening were defective in this respect, but I have been informed since my visit that this defect has been remedied.

Excelsior mine was in very fair condition both as regards ventilation and drainage at date of last visit. A new opening has been made into a new territory near by the old property; 7,000 cubic feet of air was being circulated in the mine.

At Penn mine there was 12,220 cubic feet of air in circulation which was equal to nearly 200 cubic feet for each person employed therein, and although this large volume of air was being produced it was poorly distributed to face of works. Too much leakage of the current was allowed.

Mines in Indiana and Westmoreland Counties, Situated on the West Penn Railroad.

Graceton Nos. 1 and 2, formally Superior mines Nos. 1 and 2, have been very much improved during the year. At date of last visit neither of these mines were in operation, but at the visit prior to that I measured about 20,000 cubic feet of air at No. 2 mine and about 13,000 cubic feet at No. 1. Two fans have been erected at these mines during the year, one eight feet in diameter at No. 1 mine and the other ten feet in diameter at No. 2. No. 2 is in excellent condition and worked on the double-heading system and No. 1 on the single-heading system which is also in fair condition.

Mitchell mine is not a large operation. The ventilating power is not yet erected at this mine. It seems to be the intention of the mine manager to depend on the natural forces to produce sufficient ventilation for the mine.

The Maher, Smith and Turner mines were in very good condition.

Fairbank and Foster mines were in splendid condition both in regard to ventilation and drainage. There was being produced at the former 13,500 cubic feet of air, and at the latter, 14,700 cubic feet, and the currents were being conveyed to face of workings.

At the Avonmore mine there was 13,840 cubic feet of air being produced which was quite sufficient for such a mine, had it been conveyed nearer to face of some of the headings. In other respects the mine was in fair condition.

Pine Run is a new drift opening, operated by the Pine Run Coal and Coke Company. It was in excellent condition.

Bagdad No. 3 was as usual in splendid order. The ventilation (15,000 cubic feet) and drainage of the mine are all that could be desired.

Leechburg No. 4 was in fine order and for the twenty miners employed there was a volume of air equal to 8,200 cubic feet.

Leechburg No. 3 had a volume of air distributed throughout the workings of the mine equal to 11,000 cubic feet. The drainage of mine can be classed as very favorable.

Bagdad No. 2 was in reasonable condition. The volume of air passing

over the ventilating furnace was 17,000 cubic feet but much of this quantity was lost through leakage before it reached the working parts of the mine. The general condition of mine is good.

At Blackstone or Lewis & Co.'s mine an air shaft has been sunk and a temporary furnace has been built which was producing about 9,000 cubic feet of air. The mine was in fair order.

TABLE I.—*Showing Location of Collieries and Postoffice of Superintendents in the Third Bituminous Mine District, 1891.*

NAME OF COLLIERY.	Name of Operator.	Location—County.	Name of Mine Superintendent.	Postoffice Address.
Apollo	Maher Coal and Coke Company	Westmoreland	F. G. Cornell	Freeport, Armstrong county.
Avonmore	Avonmore Coal Company	Armstrong	L. W. Hicks	Avonmore, Indiana county.
Avondale	Avondale M. F. and Gas Company	Clarion	James Mitchell	Lawsonham, Clarion county.
Allegheny	Allegheny Coal Company	Butler	Frank Morrison	Grove City, Mercer county.
Acme	Acme Mining Company	Clarion	J. W. Hill	East Brady, Clarion county.
Big Soldier Run	Bell, Lewis and Yates Coal Mining Company	Jefferson	George Mellinger	Reynoldsville, Jefferson county.
Black Diamond No. 1	Filer, Sutliff & Co.	Mercer	Henry Filer	Grove City, Mercer county.
Black Diamond No. 2	Filer, Sutliff & Co.	Mercer	Enoch Filer	Sharon, Mercer county.
Bagdad Nos. 2 and 3	Bagdad Coal Company	Westmoreland	Alfred Hicks	Leechburg, Armstrong county.
Barnes	Mercer Coal Company	Butler	W. H. Richardson	Greenville, Mercer county.
Baker	L. S. Hoyt	Beaver	L. S. Hoyt	Rock Point, Beaver county.
Beale		Westmoreland	J. E. Beale	Leechburg, Armstrong county.
Beaver Falls	James Clayton	Beaver	James Clayton	Beaver Falls, Beaver county.
Brier Ridge	C. N. Shipman & Co.	Clarion	M. Morris	Rimersburg, Clarion county.
Blackstone	Lewis & Co.	Westmoreland	Alfred Hicks	Leechburg, Armstrong county.
Beaver	Beaver Coal and Coke Company	Lawrence	H. K. Hartsuff	Rock Point, Beaver county.
Cannelton	Morgan Coal Company	Beaver	H. V. Sanor	Cannelton, Beaver county.
Carver	Carver Coal Company	Mercer	Frank Filer	Stoneboro, Mercer county.
Chestnut Ridge	Filer, Westerman & Co.	Mercer	Enoch Filer	Sharon, Mercer county.
Catfish Run	Catfish Run Coal Company	Clarion	Michael Lehner	Catfish, Clarion county.
Clinton	Clinton Coal Company	Lawrence	Alfred Harbison	Rock Point, Beaver county.
Clayton	W. F. Clayton	Beaver	W. F. Clayton	Beaver Falls, Beaver county.
Cherry Run	Cherry Run Coal Company	Clarion	John G. Hagerty	Brady's Bend, Armstrong county.
Church Hill	Church Hill Coal Company	Clarion	C. W. Horner	Dutch Hill, Clarion county.
Diamond	Thomas Mitchell & Sons	Clarion	W. S. Mitchell	East Brady, Clarion county.
Excelsior	Wampum Run Coal Company	Lawrence	R. H. Mehard	Wampum, Lawrence county.
Fairmount Nos. 1 and 2	Fairmount Coal and Iron Company	Armstrong	S. Taylor Sheaffer	New Bethlehem, Clarion county.
Fairmount No. 4	Fairmount Coal and Iron Company	Clarion	S. Taylor Sheaffer	New Bethlehem, Clarion county.
Fairbank	Saltsburg Coal Company	Westmoreland	D. S. Robinson	Saltsburg, Indiana county.
Foster	Saltsburg Coal Company	Indiana	D. S. Robinson	Saltsburg, Indiana county.
Glen	J. R. Smith	Armstrong	J. R. Smith	Manorville, Armstrong county.
Graceton Nos. 1 and 2	McCreary Coal and Coke Company	Indiana	Harry McCreary	Graceton, Indiana county.
Gosford	J. L. Turner	Armstrong	J. L. Turner	Gosford, Armstrong county.
Gomersal	Gomersal Coal Company (Limited)	Butler	William Ferguson	Gomersal, Butler county.
Haliville		Mercer		
Hardscrabble	Brady's Bend Mining Company	Clarion	C. F. Hartwell	Oil City, Venango county.
Jackson	James Dye	Mercer	James Dye	Jackson Center, Mercer county.
Keister	George Stage	Butler	George Stage	Greenville, Mercer county
Karns	Pittsburg, Fairport Coal and Coke Company	Butler	M. L. Metheny	Karns City, Butler county.
Keystone	Keystone Coal and Mining Company	Clarion	George E. Henry	East Brady, Clarion county.
Kittanning	Kittanning Iron Company (Limited)	Armstrong	Henry Colwell	Kittanning, Armstrong county.
Lackawannock	Pierce Coal Company (Limited)	Mercer	Archy McIntyre	Neshannock, Mercer county.
Leechburg Nos. 3 and 4	Leechburg Coal and Coke Company	Westmoreland	A. W. Asbaugh	Leechburg, Armstrong county.
Mineral Ridge	Mineral Ridge Coal Company	Clarion	C. W. H. Elche	West Monterey, Clarion county.
Monarch	Monarch Coal Company	Clarion	C. P. McCafferty	East Brady, Clarion county.
Mitchell	Indiana Coal Company	Indiana	Jacob Graff	Blairsville, Indiana county.
Maher	Maher Coal Company	Indiana	Thomas Maher	Blairsville, Indiana county.
New Hamilton	Bell, Lewis and Yates Coal Mining Company	Jefferson	George Mellinger	Reynoldsville, Jefferson county.

Oak Ridge	Oak Ridge Coal and Mining Company	Armstrong	J. C. Baker	Oak Ridge Station, Armstrong county.
Orinsky Slope	Shenango Coal and Mining Company	Mercer	J. H. Lane	Jackson Center, Mercer county.
Pleasant Valley	Bell, Lewis and Yates Coal Mining Company	Jefferson	George Meilinger	Reynoldsville, Jefferson county.
Pine Run	Pine Run Coal Company	Westmoreland	W. S. Lewis	Leechburg, Armstrong county.
Penn	Penn Coal Company (Limited)	Lawrence	W. H. Marquis	New Castle, Lawrence county.
Pardue	Mercer Coal Company	Mercer	W. H. Richardson	Greenville, Mercer county.
Riverview	Riverview Coal and Mining Company	Armstrong	James L. Moore	No. 22 West Swan street, Buffalo, N. Y.
Rock Point	Rock Point Coal Company	Lawrence	William Brown	Chewtown, Lawrence county.
Rimerton	Rimerton Coal and Mining Company	Armstrong	C. E. Butler	Rimer, Armstrong county.
Sharon	Sharon Coal Company	Mercer	M. W. Jenkins	Grove City, Mercer county.
Shenango	Shenango Coal and Mining Company	Mercer	J. L. Lane	Jackson Center, Mercer county.
Sprague	Bell, Lewis and Yates Coal Mining Company	Jefferson	George Meilinger	Reynoldsville, Jefferson county.
Stoneboro No. 2	Mercer Coal and Iron Company	Mercer	Benjamin F. Esgar	Stoneboro, Mercer county.
Stoneboro No. 3	Mercer Coal and Iron Company	Mercer	Herbert Edwards	Stoneboro, Mercer county.
Spears		Mercer	James A. Spears	Grove City, Mercer county.
Star No. 2	Northwestern Coal and Iron Company	Clarion	S. Taylor Sheaffer	New Bethlehem, Clarion county.
Smith	Robert Smith	Indiana	Robert Smith	Blairsville, Indiana county.
Sterling	Sterling Mining Company	Beaver	George Gould	Cannelton, Beaver county.
Standard	Cant Brothers	Jefferson	G. F. Cant	Reynoldsville, Jefferson county.
Turner (Indiana county)	J. M. Turner	Indiana	J. M. Turner	Blairsville, Indiana county.
Turner (Butler county)	Hilliard Coal and Coke Company	Butler	C. A. Jewell	Hilliard, Butler county.

TABLE II.—*Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Third Bituminous Mining District, for the year ending December 31, 1891.*

NAMES OF COLLIERIES.	Location County.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number mine locomotives.	Number coke ovens.
Apollo	Westmoreland	1,632		1,632	98	19			25			
Avonmore	Armstrong	53,000		51,000	200	92		3	100			
Avondale	Clarion	31,901		31,901	239	55	1					
Allegheny	Butler	37,724		37,444	248½	63		1	182	2		
Acme	Clarion	40,879		40,879	226	73						
Big Soldier Run	Jefferson	369,639	30,904	351,006	253	520	2		1,508	3		100
Black Diamond No. 1	Mercer	73,207		73,207	212	92			515	6		
Black Diamond No. 2	do.	13,067		13,067	75	61			123	4		
Bagdad No. 2	Westmoreland	25,723		25,723	260	53			450			
Bagdad No. 3	do.	24,763		24,763	279	50			450			
Barnes	Butler	28,144		27,606	175	51			16	1		
Baker	Beaver	45,940		45,940	193	87						
Beale	Westmoreland	5,000		5,000	40	34						
Beaver Falls	Beaver	8,991	56	8,991	246	21			36			1
Brier Ridge, formally Albion	Clarion	43,300		43,300	247	124	1					
Blackstone or Lewis	Westmoreland	28,421		28,421	250	56			240			
Beaver	Lawrence	49,584		48,954	267	103			219	1		
Cannelton	Beaver	12,183		12,183	255	27			65			
Carver	Mercer	73,503		73,503	253	132		1	322	6		
Chestnut Ridge	do.	69,277		69,277	255	110			90	5		
Catfish Run	Clarion	50,000		5,000	60	40						
Clinton	Lawrence	25,756		25,756	239	62		1	70			
Cherry Run	Clarion	16,962		16,962	135	53						
Church Hill	do.	16,891		16,891	240	46						
Clayton	Beaver											
Diamond	Clarion	51,180		51,180	260	73						
Excelsior	Lawrence	30,307		30,307	200	76			200		1	

Fairmount Nos. 1 and 2	Clarion	180,903		180,903	274	294			1,400	2	1	
Fairmount No. 4	do.	72,160		72,160	250	119			700		1	
Fairbank	Westmoreland	108,953		108,953	256	207	1				1	
Foster	Indiana	47,265		47,165	302	78				1	1	
Glen	Armstrong	10,974		10,974	313	28			90			
Graceton No. 1, formally Superior No. 1	Indiana	36,000	24,120		302	64						
Graceton No. 2, formally Superior No. 2	do.	92,400	69,300		302	173				1		181
Gosford	Armstrong	15,054		15,054	243½	46		2				
Gomersal	Butler	42,100		42,100	245	70			275			
Hallville	Mercer	12,000		12,000	90	50						
Hardscrabble	Clarion	20,000		20,000		75		1				
Jackson	Mercer	6,160		6,160	140	13						
Keister	Butler	25,045		25,045	257	43						50
Karns	do.	14,400		14,400	250	24			24			
Keystone	Clarion	45,185		45,185	253	69			200			
Kittanning	Armstrong	21,833	11,314½			180						
Lackawannock	Mercer	11,351		11,351	151	51			300	4		66
Leechburg No. 3	Westmoreland	53,337		49,873	280	72				1		
Leechburg No. 4	do.	26,607		26,357	311	33						
Mineral Ridge	Clarion	21,162		21,162	250	53						
Monarch	do.	19,429		19,429	175	54						
Mitchell	Indiana	21,669	12,203	1,358	309	38		1				24
Maher	do.	24,002		24,002	295	26						
New Hamilton	Jefferson	67,079		67,224	110	190		2	285			
Oak Ridge	Armstrong	133,526		131,849	258	200						
Ormsby slope	Mercer	21,344		19,161	255	45		2	94	2		
Pleasant Valley	Jefferson	121,990		119,138	213	131			498			
Pine Run	Westmoreland											
Penn	Lawrence	53,449		53,449	254	88			295			
Pardoe	Mercer	50,837		47,996	255	100	1	3	365	3	1	
Riverview	Armstrong	47,558		47,558	208	105	1			3		
Rock Point	Lawrence	13,101½		13,101½	131	39						
Rimerton	Armstong	18,000		18,000	204	37		1	120			
Sharon, formally Wick	Mercer	42,292		40,354	264½	61		3	66	2		
Shenango	do.	48,249		45,695	264	86		1	166	4		
Sprague	Jefferson	209,921		177,602	224	284	1	4	856	1		
Stoneboro No. 2	Mercer	73,269		72,562	268½	143		3	131	1		
Stoneboro No. 3	do.	44,214		42,417	257½	92		1	169	2		
Spears	do.	41,000		40,000	208	62				3		
Star No. 2	Clarion	129,116		129,116	259	218		4	990	2		
Smith	Indiana	22,273		22,273	290	25						
Sterling	Beaver	72,000		72,000	270	129			420	2		
Standard	Jefferson	26,000		26,000	147	102			171	1		
Turner (Indiana county)	Indiana	19,609		19,609	310	22						
Turner (Butler county)	Butler	12,860		12,860	245	41			51	2		
Total		3,361,550	147,897	3,119,894	15,720	6,118	8	34	12,257	65	1	422

24-12-91

TABLE No. III.—*Showing the number of each Class of Employes at each Colliery in the Third Bituminous Mine District During the year 1891*

NAMES OF COLLIERIES.	Location—County.	NUMBER OF PERSONS EMPLOYED INSIDE.						NUMBER OF PERSONS EMPLOYED OUTSIDE.					Grand total inside and outside.
		Inside foreman or mine-boss.	Miners.	All company men.	Drivers and runners.	Doorboys and helpers.	Total inside.	Blacksmiths and carpenters.	Engineers and firemen.	All other company men.	Superintendents, book-keepers and clerks.	Total outside.	
Apollo	Westmoreland	1	16		1		18				1	1	19
Avonmore	Armstrong	1	75	1	5	1	83	1			1	2	92
Avondale	Clarion	1	43	1	3		48	1		5	1	7	55
Allegheny	Butler	1	49	3	4		57	1	1	4		6	63
Acme	Clarion	1	56	7	4	2	70	1			2	3	73
Big Soldier Run	Jefferson	1	313	80	32	15	441	1	5	65	6	79	520
Black Diamond No. 1	Mercer	1	65	5	7	2	80	1	2	7	2	12	92
Black Diamond No. 2	do.	1	45	3	3		52	1	2	4	2	9	61
Bagdad No. 2	Westmoreland	1	42	2	2		47	1		3	2	6	53
Bagdad No. 3	do.	1	37	2	4		44	1	2	3	3	10	51
Barnes	Butler	1	30	4	6		41	2		3	2	6	47
Baker	Beaver	1	70	3	7		81	1		3	2	6	87
Beale	Westmoreland	1	25	1	2		29	1		3	1	5	34
Beaver Falls	Beaver	1	17		1		19			1	1	2	21
Brier Ridge (formerly Albion)	Clarion	1	106	3	4	1	115	1		7	1	9	124
Blackstone or Lewis	Westmoreland	1	44		3	1	49	1		5	1	7	56
Beaver	Lawrence	1	79	3	7		90	1	2	6	4	13	103
Cannelton	Beaver	1	18	2	3		24			2	1	3	27
Carver	Mercer	1	98	7	9	3	118	2	2	7	2	14	132
Chestnut Ridge	do.	1	80	6	8	3	98	2	3	5	2	12	110
Catfish Run	Clarion	1	34		2		37			3		3	40
Clinton	Lawrence	1	45	5	4		55	1		3	3	7	62
Clayton	Beaver												
Cherry Run	Clarion	1	42	5	4		52	1				1	53
Church Hill	do		32	3	2		37	3		5	1	9	46
Diamond	do.	1	60	1	4	1	67	1		4	1	6	73
Fairmount Nos. 1 and 2	do.	1	220	3	18	9	251	4	3	33	3	43	294
Fairmount No. 4	do.	1	75	2	11	3	92	3	3	18	3	27	119

Fairbank	Westmoreland	1	160	8	15	5	189	2	1	13	2	18	207
Foster	Indiana	1	55	5	4	2	67	2	2	5	2	11	78
Glen	Armstrong	1	20		3		24			3	1	4	28
Graceton No. 1 (formerly Superior No. 1)	Indiana	1	38	1	2	2	44			20		20	64
Graceton No. 2 (formerly Superior No. 2)	do.	1	91	3	6	2	103	3		64	3	70	173
Gosford	Armstrong	1	37	1	1		41			3	2	5	46
Gomersal	Butler	1	53	3	4	1	62	1		5	2	8	70
Hallville	Mercer	1	40	5	2		48	1	1			1	50
Hardscrabble	Clarion		60	2	6		68	1		5	1	7	75
Jackson	Mercer		10	1	2		13						13
Keister	Butler	1	34	3	3		41	1			1	2	43
Karns	do.	1	16	3	2		22				2	2	24
Keystone	Clarion	1	55	2	4		62	1		4	2	7	69
Kittanding	Armstrong	1	36	3	5	1	46		1	18		19	65
Lackawannock	Mercer	1	37	2	2	1	43	1	3	3	1	8	51
Leechburg No. 3	Westmoreland	1	60	4	3		68	1		2	1	4	72
Leechburg No. 4	do.	1	26	2	1		30			2	1	3	33
Mineral Ridge	Clarion	1	40	1	4		46	1		5	1	7	53
Monarch	do.	1	43	4	2		50	1			3	4	54
Mitchell	Indiana	1	25	2	2		30			7	1	8	38
Maher	do.	1	20	2	2		25				1	1	26
New Hamilton	Jefferson	1	150	16	10	4	181	1		8		9	190
Oak Ridge	Armstrong	1	161	10	12	7	191	4	3		2	9	200
Ormsby Slope	Mercer	1	30	2	3		36	1	2	3	2	9	45
Pleasant Valley	Jefferson	1	102	4	10	6	123	1		7		8	131
Pine Run	Westmoreland												
Penn	Lawrence	1	67	2	8	1	79	1		6	2	9	88
Pardoe	Mercer	1	71	3	10		85	2	5	3	3	15	100
Riverview	Armstrong	1	75	10	8	1	95	1		7	2	10	105
Rock Point	Lawrence	1	28	1	3		33	5			1	6	39
Rimerton	Armstrong	1	28		2		32	1		3	1	5	37
Sharon (formerly Wick)	Mercer	1	46	4	2		53	1	2	4	1	8	61
Shenango	do.	1	62	4	4	1	72	3	2	7	2	14	86
Sprague	Jefferson	1	210	20	19	10	260	2	2	20		24	284
Stoneboro No. 2	Mercer	1	97	10	13	5	126	2	1	12	2	17	143
Stoneboro No. 3	do.	1	66	1	5	1	79	1	3	7	2	13	92
Spears	do.	1	44	6	3	1	55	1	2	3	1	7	62
Star No. 2	Clarion	1	145	3	15	4	168	6	4	37	3	50	218
Smith	Indiana	1	20	1	2		24				1	1	25
Sterling	Beaver	1	106	2	7	2	118	1	1	8	1	11	129
Standard	Jefferson	1	83	3	3	2	92	1		7	2	10	102
Turner (Indiana county)	Indiana	1	18		2		21				1	1	22
Turner (Butler county)	Butler	1	30	1	2	1	35	1	2	2	1	6	41
Excelsior	Lawrence	1	51	8	4		64	2	2	6	2	12	76
Totals		67	4,462	325	384	101	5,339	90	65	517	107	779	6,118

TABLE IV—*List of Fatal Accidents occurring in and about the Mines of the Third Bituminous Mine District, for the year ending December 31, 1891.*

Date of accident.	NAME OF PERSON	Occupation.	Age.	Widow.	No. of orphans.	Name of Colliery.	Location—County.	Nature and Cause of Accident
Jan. 9.	Frank Craig.	Miner. . . .	23	. . .	. . .	Riverview.	Armstrong.	Mr. Craig was killed instantly by a fall of coal of about four tons in weight. He was working with a younger brother and had the coal in his room undercut to a depth of from four to five feet and for more than twelve feet across the place of which seven or eight feet of the mined coal in width fell upon him. He had sounded the coal and knew that it was very loose. He had also told his brother Albert to go to the other end of the room so as not to be in front of the mined coal, fearing that it might fall and injure him, but after Albert had obeyed the instructions given, Frank immediately sat down in front of the loose coal and began to undercut, when it dropped upon him. This was certainly extreme carelessness on his (Frank's) part. The room was being driven in the crop of the seam and the solid coal was very much fractured by a large number of "water cracks."
13.	James Pallano.	Laborer. . . .	24	S.	. . .	Big Soldier Run. . .	Jefferson.	These two Italians were instantly killed by a fall of roof slate which was being taken down over a siding or double parting on No. 3 main heading on the Saturday evening about 12 o'clock. There were three Italians engaged at this work and James Pallano was recognized as the leader. He had some experience at such work and was to be assisted by two other laborers (Domenico Cercllo and Frangesco Marzza). The extent of the roof to be taken down was about sixteen feet in width and about one hundred feet in length. Barney Shannon, assistant mine-boss, took Pallano into the mine and gave him the directions how to proceed to take the roof down. The evidence showed that Pallano had begun his work all right, but after having fired as many as five shots into the roof and they not having the effect of bringing it down he went directly under the hanging mass and began with an augur to drill another hole, when the roof for about thirty feet long and sixteen
13.	James Nicola Rossi.	Pumper. . . .	43	M.	2			

								feet wide fell. Rossi was a pumper and had only come to this place to visit the other Italians, and had sat down under the loose roof watching Paliano work and was caught. It was apparent that the explosive used in the five shots had spent its force in a "slip" which separated the twelve or fourteen inches of slate from the sand rock.
Jan. 28,	Robert Hays,	Miner,	44	M.	8	Avondale,	Clarion,	Mr. Hays was killed by a fall of roof slate while working in his room. He was a careful miner and had his working-place well timbered, but a hidden fracture that was over the coal no doubt deceived him. We consider this as one of the unavoidable accidents incident to mining.
Apr. 4,	Henry Ditch,		14			Sprague,	Jefferson,	This young boy was using carbon oil in the mine for lighting purposes and had a half pint bottle of it in his pocket. Unfortunately, however, the bottle was broken, thereby allowing the oil to saturate his clothes to such an extent that they caught fire from the flame of his lamp, which burned him so severely about the hips and legs that he died from the effects on the 16th of the same month.
June 11,	William Newell,	Miner,	65	M.		Keister,	Butler,	Mr. Newell was killed by a fall of roof slate while he was sitting on floor at end of mine wagon in his room. He had his working-place very well timbered and there was only a few feet of space between the props and the coal face, and to all appearances the roof was very strong. The stone that dropped out of roof upon him was about six feet long, four feet wide and one foot thick. The fractures in roof were so close that they must have escaped the notice of the old gentleman. Such an accident might have happened to the most careful workman.
July 24,	John Mariacher,	Miner boy,	13			Pardoe,	Mercer,	This young boy was working with his father on an entry pillar and was killed instantly by a fall of coal. The boy had been working at an open ended block of coal and was about leaving it when it fell and caught him and crushed him to death. His father had just told the boy not to work any more, but it was too late, although his son was in the act of obeying his father.
Dec. 26,	William Andrew Bartz,	Miner,	30	S.		Fairbank	Westmoreland,	This miner was fatally injured by a fall of slate. He was told by the mining-boss to post up the slate and keep himself safe, as he considered it loose, but he failed to obey the instructions given him. He paid the penalty of his own recklessness.

TABLE V.—*List of Non-Fatal Accidents occurring in and about the Mines of the Third Bituminous Mine District for the year ending December 31, 1891.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
Jan. 3.	Wm. Hoffman.		16	S.	Sprague.	Jefferson.	Injured by mine wagons.
8.	David McMillen.	Miner.	42	M.	Star No. 2.	Clarion.	Hurt by a fall of roof slate.
16.	Robert Snedden.	Miner.	25	S.	Ormsby slope.	Mercer.	Back injured by a fall of coal.
19.	E. C. Cunningham.	Driver.	28	M.	Gosford.	Armstrong.	Injured by mine wagons.
21.	H. H. Williams.	Driver.	18	S.	Wick, or Sharon.	Mercer.	Injured by mine wagons.
21.	Thomas Northcot.	Miner.	24	M.	Shenango.	Mercer.	Injured by fall of coal.
Feb. 2.	Archy Maxwell.	Driver.	31	M.	Carver.	Mercer.	Badly injured between entry pillar and wagon.
10.	David Richardson.	Miner.	28	M.	Avonmore.	Armstrong.	Injured by fall of coal.
11.	Benjamin Miller.	Miner.	38	S.	Hardscrabble.	Clarion.	Injured by fall of "bony."
21.	Jacob Pens.	Miner.	46	M.	Star No. 2.	Clarion.	Injured by coal from a premature shot.
21.	Adam Pens.	Miner.	21	S.	Star No. 2.	Clarion.	Injured by coal from a premature shot.
Mar. 9.	J. S. Peddicord.	Driver.	20	S.	Mitchell.	Indiana.	Injured by mine wagons.
15.	Christ. Stitt.	Miner.	25	M.	New Hamilton.	Jefferson.	Injured by fall of "top" coal.
19.	Oscar Hays.	Driver.	22	..	Sprague.	Jefferson.	Injured by mine wagons.
20.	Peter Smith.	Miner.	45	S.	Stoneboro No. 3.	Mercer.	Injured by fall of slate.
Apr. 15.	Mathias Shaner.	Miner.	53	M.	Pardoe.	Mercer.	Injured by mine wagons.
May 19.	Wm. Hawk.	Miner.	24	S.	Sprague.	Jefferson.	Injured by fall of coal.
June 16.	George Shaner.	Driver.	22	S.	Pardoe.	Mercer.	Injured by mine wagons.
20.	Joseph Harris.	Miner.	30	M.	New Hamilton.	Jefferson.	Injured by fall of "top" coal.
30.	George Gifford.	Driver.	15	S.	Rimerton.	Armstrong.	Injured by mine wagons, outside of mines.
July 20.	Joseph Kridle.	Miner.	45	S.	Allegheny.	Butler.	Injured by fall of roof slate.
30.	Thomas Griffith.	Miner.	48	M.	Clinton.	Lawrence.	Injured by fall of rock.
31.	Thomas McQuade.	Miner.	19	S.	Stoneboro No. 2.	Mercer.	Injured by a premature discharge of powder.
31.	Guy Thomson.	Miner.	17	S.	Stoneboro No. 2.	Mercer.	Injured by a premature discharge of powder.
31.	David Thomson.	Miner.	19	S.	Stoneboro No. 2.	Mercer.	Injured by a premature discharge of powder.
Aug. 17.	John Thompson.	Miner.	38	M.	Sharon.	Mercer.	Slightly injured by a fall of coal.
Sept. 14.	Wm. Bowman.	Miner.	56	M.	Avonmore.	Armstrong.	Arm broken and head injured by fall of coal.
22.	John Kelley.	Miner.	45	M.	Star No. 2.	Clarion.	Back hurt by a fall of coal.
Nov. 3.	John Glover.	Miner.	20	S.	Pardoe.	Mercer.	Leg crushed by a fall of coal.
30.	C. H. Brice.	Driver.	30	M.	Gosford.	Armstrong.	Hand badly injured while spragging mine wagon outside.
Dec. 1.	James Barber.	Tanker.	35	M.	Sharon.	Mercer.	Foot injured by mine wagon.
1.	Henry Robinson.	Miner.	27	M.	Ormsby slope.	Mercer.	Leg broken by fall of slate.
2.	George Blystone.	Miner.	63	M.	Avonmore.	Armstrong.	Injured by fall of roof slate.
9.	Wm. Daley.		15	S.	Sprague.	Jefferson.	Injured while coupling mine wagon.

FOURTH BITUMINOUS DISTRICT.

(McKean, Potter, Tioga, Bradford, Sullivan, Lycoming, Clinton, Cameron, Elk, and that portion of Jefferson lying north of the Low Grade division of the Allegheny Valley railroad, and all that portion of Clearfield county adjacent to and north of the Low Grade division of the Allegheny Valley railroad, and all that portion of Centre county lying east and adjacent to the B. & S. S. railroad, north and adjacent to the Bald Eagle Valley railroad.)

Hon. THOMAS J. STEWART, *Secretary of Internal Affairs:*

SIR: I have the honor of submitting herewith my annual report as Inspector of mines of the Fourth bituminous coal district of this state for the year ending December 31, 1891, in compliance with the act of assembly of June 30, 1885, together with the usual tables compiled from the annual reports of the operators returned to my office. Blanks were duly forwarded to all the mines subject to inspection under the law, sixty-six in number, and returns have been received from all but three.

These returns show a considerable increase in production for the whole district over that of the preceding year, owing in a large measure to better markets and an increased demand for coal. Three mines have been worked out and abandoned, and ten new openings have been made in the district during the year.

Several new fans and furnaces have been erected and numerous other improvements have been made in the way of machinery for drainage and transporting the coal indicative of a steady advancement in the matter of improvements under the law, and a disposition upon the part of the operators to improve the safety and sanitary condition of their mines.

I also append a report on the Miners' State Cottage Hospital at Blossburg, by the Honorable Charles Tubbs; also a few illustrations of new machinery for handling coal at the Bear Run mine, furnished by R. T. Dodson, superintendent.

The number of fatal accidents occuring during the year show a decrease of twenty-five per cent. and the non-fatal accidents a decrease of about twenty-seven per cent. Three of the fatal accidents were mainly due to the victim's own carelessness, and the other to circumstances which apparently could not have been avoided. A large number of the non-fatal accidents were due to lack of care on the part of each individual injured.

Respectfully submitted.

JAMES N. PATTERSON,
Inspector.

BLOSSBURG, PA., *February 1, 1892.*

SYNOPSIS OF REPORT.

Number of mines operated,	66
Number of tons produced,	3,834,646.25
Number of tons shipped,	3,178,052.01
Number of tons of coke manufactured,	108,026.01
Number of days worked,	6,575.5
Number of miners employed,	5,747
Number of outside men,	1,020
Total inside and outside,	6,767
Number of horses and mules,	513
Number of mine locomotives,	21
Number of steam boilers,	45
Number of coke ovens reported,	686
Number of kegs of powder used as per operators' reports,	11,298
Number of fatal accidents,	6
Number of non-fatal accidents,	16
Number of tons produced per each fatal accident,	639,107.7
Number of tons produced per each non-fatal accidents,	239,665.4

FATAL ACCIDENTS.

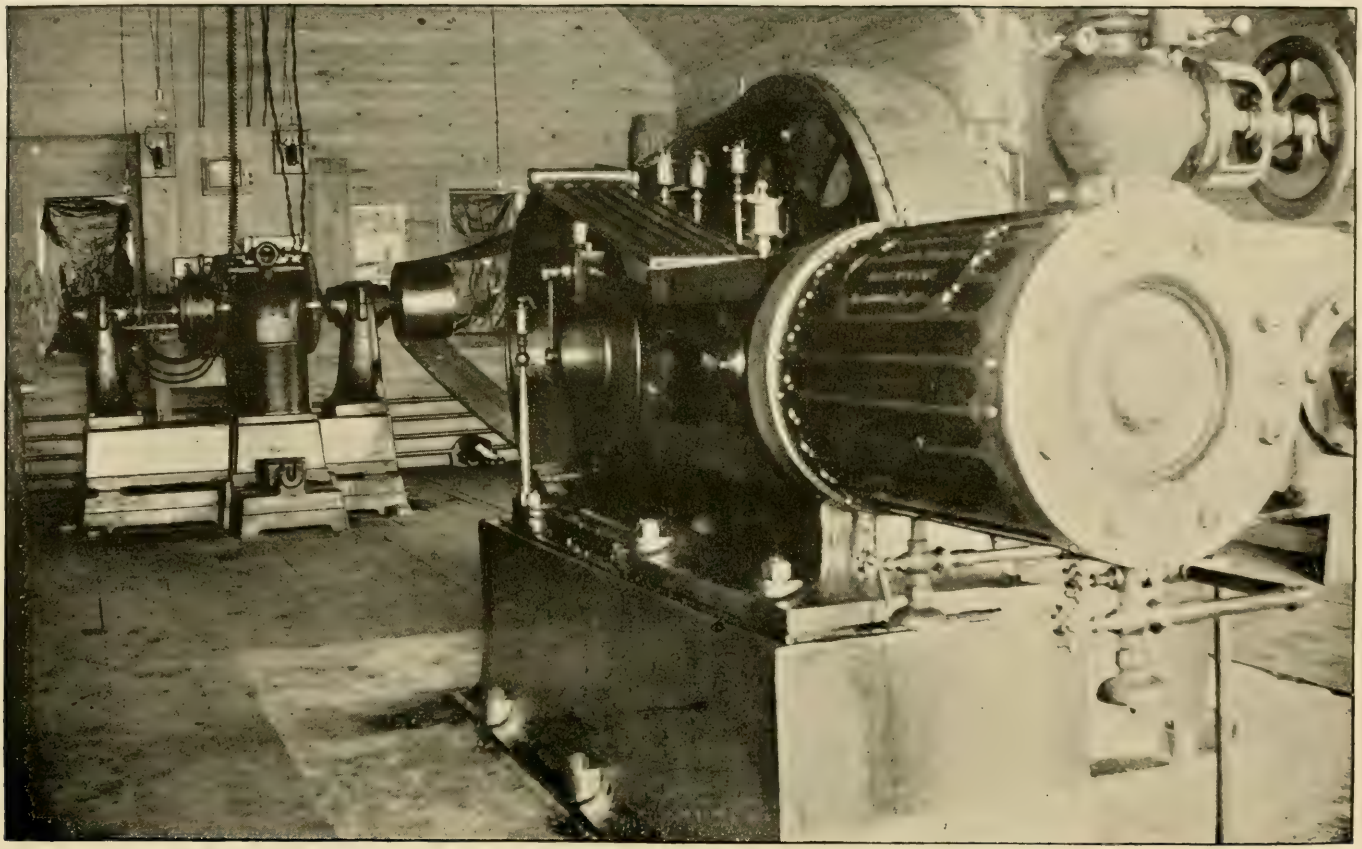
By fall of slate,	3
By fall of coal,	2
By fall of slate and coal,	1
Total,	6

NON-FATAL ACCIDENTS.

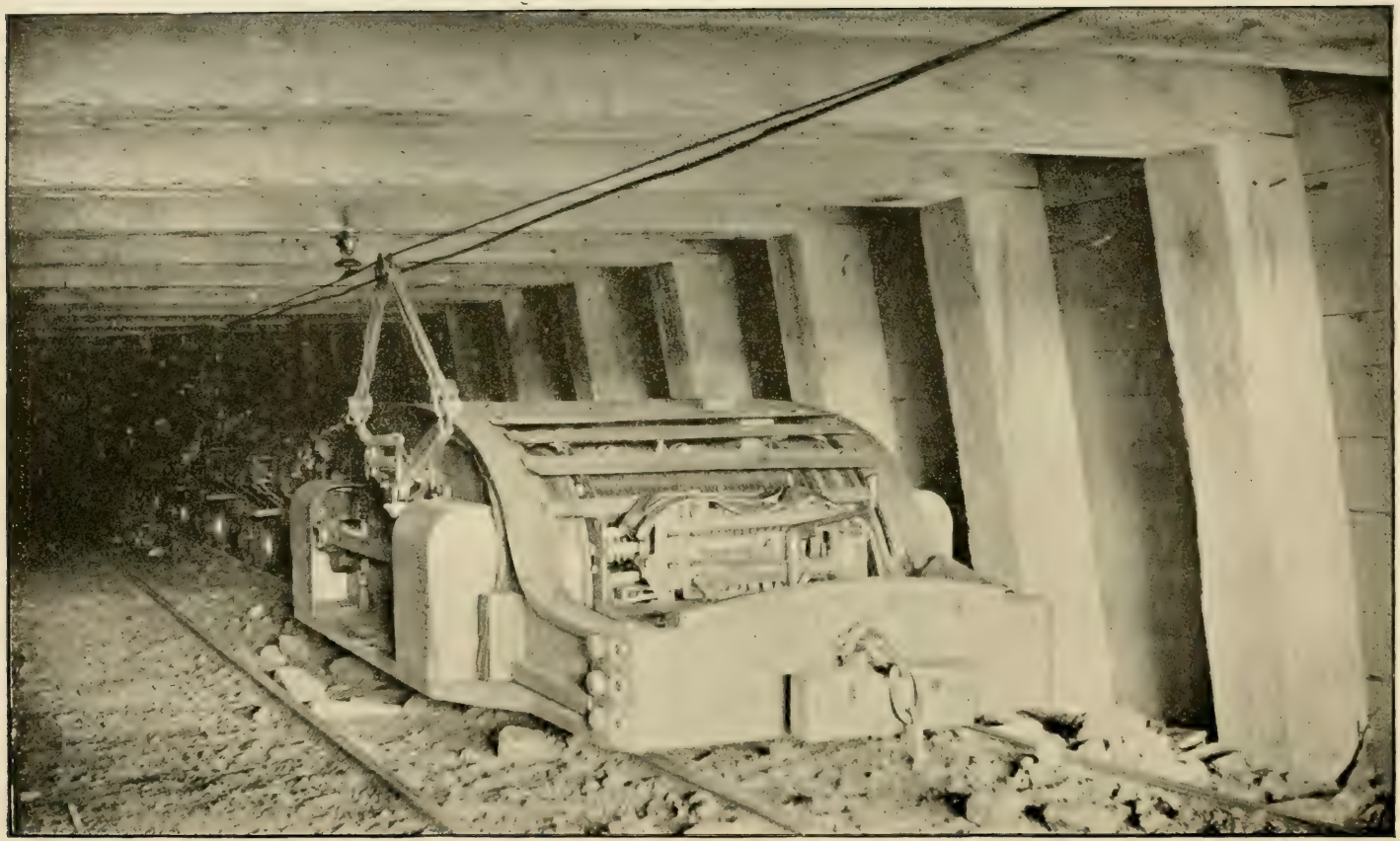
By fall of coal,	10
By mine cars,	3
By fall of slate,	2
By explosion of powder,	1
Total,	16

TIOGA COUNTY MINES.

The Morris Run slope, Salt Lake and Jones Extension are operated by the Morris Run Coal Mining Company. I found these mines in good condition. The Jones Extension mine has not been running since last June. Air measurement at the Morris Run slope gave 125,000 cubic feet of air per minute in the month of December, and at the Salt Lake mine I found 41,200 cubic feet passing per minute. W. R. Gilmour is mine foreman, and Cambell Haddow and M. Driscoll assistants; W. S. Nearing is superintendent and mining engineer.



ELECTRIC POWER STATION, BEAR RUN MINE.



ELECTRIC MOTOR, BEAR RUN MINE.

ELECTRIC MACHINERY, BEAR RUN MINE.

INCLINE PLANE AND ELECTRIC MOTOR, BEAR RUN MINE.

Arnot mines, Nos. 3 and 4, are operated by the Blossburg Coal Company, and were found to be only in fair condition as to ventilation and drainage. A twenty-foot Guibal fan is used to ventilate both mines. Richard Simpson is mine boss, assisted by J. F. Nelson. R. T. Dodson is superintendent.

The same company operates the Bear Run mine at Landrus. It is ventilated by furnace power. Joseph Maxwell is mine boss, and R. T. Dodson is superintendent. The coal of this mine is transported from the face of the headings to the head of the plane outside, by electric motors. Plate No. 1 shows the electric power station; 2, a sixty-horse power electric mining locomotive; 3, a device for handling empty mine cars, and Plate No. 4 shows the inclined plate with a twelve-ton electric motor en route to the mines. The plane is operated by gravity, with a one-inch steel rope 1,425 feet in length. Plate 3 also shows a three-horse power electric motor placed in a small shed. Power is transmitted 1,300 feet from station, shown on Plate No. 1. The motor operates a sprocket chain. When a wagon is dumped at tipple, it is placed at base of short inclined plane, and the sprocket chain carries it to top of incline plane, from whence it runs by gravity to foot of long plane, shown in plate 4 where the empty trip is made up for the mines.

Fall Brook mines Nos. 2 and 6, owned and operated by the Fall Brook Coal Company, have been operated nearly the whole year, and are in good condition as to both ventilation and drainage. Robert Russell is mine boss and Anton Hardt is superintendent.

Antrim mines Nos. 1, 2 and 5, operated by the Fall Brook Coal Company are in good condition; operations were suspended at Nos. 1 and 2, mines during the summer, and resumed again during the month o November. Air measurement at No. 5 inlet was 76,980 cubic feet per minute, and the air current is excellent throughout the mines. Morgan Davis is mine boss at Nos. 1 and 2, and George Sneddon at No. 5. James Pollock is superintendent and Anton Hardt is general superintendent and mining engineer.

Gaines mines, operated by the Gaines Coal and Coke Company, have been worked very little during the year.

BRADFORD COUNTY MINES.

Barclay mines, operated by the Towanda Coal Company, are worked out and operations suspended.

Long Valley mines, operated by the Long Valley Coal Company. Operations at this place are confined to taking out ribs and pillars. They have made a new opening in another tract of coal opposite to the old workings. Ventilation and drainage is fair. William R. Jones is mine-boss and E. O. Macfarlane is superintendent.

ELK COUNTY MINES.

The Dagus mines, ten in number, located at Dagus, are operated by the Northwestern Mining and Exchange Company, and were found in good condition. A new slope opening is being made by this company which is not yet completed. An accident occurred on May 8 at this slope by which George Morse lost his life, the details of which are given in the accompanying letter or report of R. Hamilton, engineer to D. Robertson, superintendent. This slope not being connected nor intended to connect with any other mine workings, was not subject to inspection under the law.

Mead Run mines, two in number, are also operated by the Northwestern Mining and Exchange Company, and are in good condition. A double Murphy fan has been erected at these mines during the year, which produces excellent ventilation. Roger Hampson is mine foreman and D. Robertson is superintendent.

Whitehead mines, operated by the Elk Coal and Coke Company, have done but little work during the year.

Cascade mines Nos. 5 and 6, operated by Kaul & Hall, have worked throughout the year. No. 6 is a new opening made to facilitate haulage from the same field in which No. 5 is operating. Martin Dippold is mine-boss and Andrew Kaul is superintendent.

Hazel Dell mine, operated by Kaul & Hall, is in fair condition.

St. Marys mines, comprising five separate openings, are operated by the St. Marys Coal Company. They were found to be in good condition, both as to ventilation and drainage, and have worked throughout the year. Joseph Eddy mine-boss, assisted by Richard Swanson, J. B. Coryell is superintendent.

Tannerdale mine, operated by the St. Marys Coal Company, worked during a portion of the year and is now suspended.

Shawmut mines at Edgar, were sold during the year by Brinker & Jones to Messrs. Smith, Kirkpatrick & Cartwright, who are now opering the mines under the name of the Shawmut Coal Company. The property consists of 6,100 acres and has a capacity of fifty cars a day. The mines are equipped with electric mining machines. The new company is still enlarging the capacity of the mines and has built another switch to connect with the Toby Branch of the Erie railroad. E. Z. Griggs is superintendent and T. J. Mathews mine-boss.

Elbow mine, located at Oyster, is a new mine just being opened up and is operated by the Noble Coal Company. E. Z. Griggs is superintendent.

JEFFERSON COUNTY MINES.

Clarion mines, owned and operated by the Northwestern Mining and Exchange Company, are in good condition. Nos. 1, 2, 3, 5, 6 and 7 mines have worked fairly well during the year. No. 4 has not done quite so well. David Robertson is superintendent.

Coal Glen mines, consisting of two separate openings, are owned and operated by the Jefferson Coal Company. Considerable improvements have been made at these mines. A fan has been erected on the south side to clear the hauling way or engine road from locomotive smoke. This prevents the smoke reaching the working portions of the mine. They have also improved the drainage. Austin Blakeslee is superintendent and J. M. Jones is mine-boss.

Beachtree mines, consisting of three separate openings, only one of which is now being operated, are in very good condition. They are owned and operated by the Rochester and Pittsburg Coal and Iron Company. David Fleming is superintendent and J. T. Smith is mine-boss.

London mine, owned and operated by the Falls Creek Coal Mining Company, was found to be in good condition. The same company also owns and operates the Dixon mine in Clearfield county. It is also in good condition, both as to ventilation and drainage. John Morrison is superintendent and William Patterson is mine-boss at both mines.

Brock mines, located at Brockwayville, operated by the Brock Coal Company, have been opened during the year. Ventilation fair. Robert Dick is mine boss and E. Z. Griggs is superintendent.

CLEARFIELD COUNTY MINES.

Williamsport mines, consisting of three separate openings, owned and operated by the Clearfield Coal Company, are in good condition. They have built a new furnace and improved the drainage very much during the year. A. K. Jacobs is superintendent and James P. Eddy is mine boss.

Rochester slope mines, consisting of two separate openings, owned and operated by Bell, Lewis & Yates, are in fair condition. They have worked fairly well during the year. John Reed is superintendent and William Bolane is mine boss.

Sandy Lick mine, owned and operated by Bell, Lewis & Yates, has worked nearly half of the year. Operations at present are suspended.

Helvetia mines, owned and operated by Adrian Islein, have been opened during the year. These mines are equipped with electric coal cutting machines. They have erected a twenty-foot Guibal fan, and the ventilation and drainage is very good. John McLeavy is superintendent.

MCKEAN COUNTY MINES.

Instanter mine, owned by the Buffalo Coal Company and operated by John F. Keating, has worked nearly full time. Ventilation is good, but the drainage is not so good. James Maloney is mine-boss.

CENTRE COUNTY MINES.

Sugar Camp mines are owned and operated by the Lehigh Valley Coal Company. They have made a new opening during the year to shorten the haulage. They have also made a new drainage tunnel 250 feet in length for the purpose of draining the south side of the workings. The general condition of these mines is good. James F. Marstellar is superintendent and Robert Cooper is mine-boss.

Lucas Hill mine, owned and operated by the last named company, is nearly worked out. Low Price is mine-boss.

Snow Shoe mine, operated by the Kelley Bros. is in fair condition. Operations here are now confined to rib and pillar work.

Two new mines have been opened and are now being operated by the Centre Coal Company near Snow Shoe. They have erected two good ventilating furnaces, and the drainage is fair. William Grawer is superintendent, and Henry Redding is mine-boss.

Cato mine, owned and operated by the Cato Coal Company, is a new opening, and no report has been made of its operations.

CLINTON COUNTY MINES.

Kettle Creek mines, two in number, owned and operated by the Kettle Creek Coal Company, have worked well during the year. Ventilation and drainage is good. A new furnace and overcasts have been added to these mines with a marked improvement in the ventilation. George L. Miller is superintendent and mining engineer, and J. Ward is mine-boss.

LYCOMING COUNTY MINES.

A new mine is being opened near Roaring Branch by the Red Run Coal Company, which is not sufficiently advanced yet for inspection under the law.

DAGUS MINES, ELK COUNTY, *May 9, 1891.*

D. ROBERTSON, Esq., *Superintendent, Ridgeway, Pa.:*

DEAR SIR: An accident occurred in No. 2 slope last night about 7.20 p. m., whereby one man was mortally injured.

The shift, consisting of Arch Donaldson and George Morse, started work at 3 p. m. About 7.20 p. m. they had two powder shots ready to fire. One was a light plug-shot, the other a heavy breaking out-shot. The first was lighted by a squib, the other by fuse. Both were lit at the same time, the squib by Donaldson and the fuse by Morse. After lighting both men started up the slope (Donaldson being ahead), and had only gone three to four yards when the plug-shot exploded, knocking them both down. Donaldson, "remembering the heavy shot," called on Morse to crawl up the slope to the loaded car which was standing fourteen yards from face. Donaldson reached the car and sheltered himself, but being in the dark could not see where Morse was.

When Donaldson called to Morse after the first shot Morse answered, but I think (being partly insensible and confounded by the effect of first shot) he, Morse, had crawled down the slope instead of up, as he was found about three yards from face of slope.

After the second shot had exploded, Donaldson called on the rock dumper, who was standing about half way up the slope, and, with his assistance, removed Morse a short distance up the slope out of the smoke, and shortly afterwards had him conveyed home, where he died an hour later.

The deceased, George Morse, had worked in the slope with Donaldson since the start. Donaldson escaped with a few bruises.

Having been in the slope frequently when Donaldson and Morse were charging and firing shots, I can safely say that they were both very careful and cautious men, using every precaution for their safety. I can see no other cause for the premature explosion than a defective squib.

The deceased, George Morse, leaves a widow and two young children, who I understand are in very poor circumstances.

Yours truly,

(Signed) R. HAMILTON, *C. E.*

REPORT ON MINER'S HOSPITAL BY HON. CHARLES TUBBS.

A hospital for injured persons, under provisions of an act of assembly, approved the 14th day of July, 1887, was erected for this (Fourth) inspection district at Blossburg during 1890. The building is located about one mile north of Blossburg, in Tioga county, upon a tract of five acres of land contributed by its citizens. The land is quite rough in aspect and descends abruptly towards the Tioga river, which flows northwardly in front of it. Excavation was made on the hillside for the site of the building overlooking the river, the town of Blossburg, and a broad expanse of country. The location is elevated, picturesque and healthful.

The hospital building erected by the state consists of two wards, 25x46 feet each, built of wood, forming north and south wings to a brick administration building located between them. In the latter is the office to the left of the entrance, the operating room to the right and a hall connecting the two wards, the dining room and kitchen. The hall also contains the stairway leading to the second floor where are situated the pharmacy, linen room and sleeping apartments of matron and nurses. Connected with each ward is a comfortable sized bath room and closet. Under the whole structure is a cellar which has been supplied with a drain since the building was received from the contractor. The hospital is heated with steam by indirect radiation. To secure thorough ventilation of the wards the windows each have a hinged sash and at each end of both wards is an open fire-place.

The water supply is from near-by springs upon the hillside, and thus far it has been sufficient for all needs.

In 1891 the trustees erected a barn, ice house and open horse sheds. These buildings are of generous proportions, substantially built, present a fine appearance and add greatly to the comfort and convenience of the inmates of the hospital.

The trustees appointed by the Governor are: Winfield Scott Nearing, mine superintendent; Charles Tubbs, attorney-at-law; Henry Jackson Landrus, lumberman; Philip Williams, banker; Hugh Cunningham, miner; Jacob Jones, mine owner, of Tioga county; Daniel Innes, tanner, and John Van Dyke, of Bradford county, and Hamilton Baily Humes, banker, of Lycoming county. Of these, W. S. Nearing was elected president; H. J. Landrus, secretary, and Philip Williams, treasurer.

David Cameron, Esq., the commissioner on the part of the state for the selecting of sites, etc., delivered the property to the above-hamed board of trustees, October 30, 1890.

Since that time the hospital has been organized by the election of a resident surgeon-in-charge, Dr. H. E. Caldwell, now succeeded by Dr. E. M. Haley, twelve consulting surgeons and Mrs. A. E. Strait as matron and superintendent. Rules and regulations for the government of the hospital were adopted and promulgated December 11, 1890.

The first patient was admitted in February, 1891, since which time it has afforded much needed relief to that large class of worthy and deserving individuals for whose benefit it was erected. While this hospital admits within its walls injured persons from all avocations in life, it is of especial value to miners as it is located in close proximity to the mines of Tioga and Bradford counties, and is of easy access by rail from all points within this inspection district.

Table I—*Showing Location of Collieries in the Fourth Bituminous Mine District.*

Name of Colliery.	Name of Operator.	Location—County.	Name of Superintendent.	Postoffice Address.
Antrim Nos. 1, 2 and 3.	Fall Brook Coal Company.	Tioga.	James Pollock.	Antrim, Tioga county.
Arnot Nos. 1, 2 and 3.	Blossburg Coal Company.	do.	R. T. Dodson.	Arnot, Tioga county.
Bear Run.	do. do.	do.	do. do.	do. do.
Barclay Nos. 1, 2 and 3.	Towanda Coal Company.	Bradford.	do. do.	do. do.
Beachtree Nos. 2 and 3.	Rochester and Pittsburg Coal and Iron Co.	Jefferson.	D. Fleming.	Beachtree, Jefferson county.
Brock.	Brock Coal Company.	do.	E. Z. Griggs.	Brockport, Elk county.
Cameron.	Cameron Coal Company.	Cameron.	H. S. Fleming.	Emporium, Cameron county.
Cascade Nos. 1 and 2.	Kaul & Hall.	Elk.	Andrew Kaul.	St. Marys, Elk county.
Clarion, 1 to 7.	Northwest Mining and Exchange Company.	Jefferson.	David Robertson.	Ridgway, Elk county.
Clermont.	Buffalo Coal Company.	McKean.	J. H. Tate.	Clermont, McKean county.
Coal Glen, Nos. 1 and 2.	Jefferson Coal Company.	Jefferson.	Austin Blakeslee.	Coal Glen, Jefferson county.
Cato.	Cato Coal Company.	Centre.	C. T. Cheeseman.	Cato, Centre county.
Dagus mines, 1 to 26.	Northwest Mining and Exchange Company.	Elk.	David Robertson.	Ridgway, Elk county.
Dixon.	Fall Creek Coal Mining Company.	Clearfield.	W. N. Stewart.	Falls Creek, Clearfield county.
Elbow.	Noble Coal Company.	Elk.	E. Z. Griggs.	Brockport, Elk county.
Fall Brook Nos. 1 and 6.	Fall Brook Coal Company.	Tioga.	Anton Hardt.	Wellsboro, Tioga county.
Fountain colliery.	Grawer & Madill.	Centre.	John Madill.	Snow Shoe, Centre county.
Gurnee Nos. 1, 2 and 3.	Gaines Coal and Coke Company.	Tioga.	Patrick C. Smith.	Gurnee, Tioga county.
Hazel Dell.	Kaul & Hall.	Elk.	Andrew Kaul.	St. Marys, Elk county.
Helvetia.	Adrian Islein.	Clearfield.	John McLeavy.	Punxsutawney, Clearfield county.
Instanter.	Buffalo Coal Company.	McKean.	John F. Keating.	Clermont, McKean county.
Kettle Creek Nos. 1 and 2.	Kettle Creek Coal Company.	Clinton.	Geo. L. Miller.	Bitumen, Clinton county.
London.	Fall Creek Coal Mining Company.	Jefferson.	W. N. Stewart.	Falls Creek, Clearfield county.
Long Valley.	Long Valley Coal Company.	Bradford.	E. O. Macfarlane.	Towanda, Bradford county.
Lucas Hill.	Lehigh Valley Coal Company.	Centre.	J. F. Marstellar.	Snow Shoe, Centre county.
Morris Run Nos. 1, 2 and 3.	Morris Run Coal Mining Company.	Tioga.	W. S. Nearing.	Morris Run, Tioga county.
Mead Run.	Northwest Mining and Exchange Company.	Elk.	David Robertson.	Ridgway, Elk county.
Mine A and B.	Centre Coal Company.	Centre.	William Grawer.	Bellefonte, Centre county.
Renovo.				
Red Run.	Red Run Coal Company.	Lycoming.	Robt. Brownlee.	Ralston, Lycoming county.
Rochester.	Bell, Lewis and Yates Coal Mining Company.	Clearfield.	John Reed.	DuBois, Clearfield county.
Sandy Lick.	do. do. do.	do.	do.	do. do.
Shawmut Nos. 1 and 2.	Shawmut Coal Company.	Elk.	E. Z. Griggs.	Brockport, Elk county.
Snow Shoe.	Kelley Bros.	Centre.	M. D. Kelley.	Snow Shoe, Centre county.
Sommerville.	J. L. Sommerville and Company.	do.	J. L. Sommerville.	do. do.
Sugar Camp Nos. 1, 2 and 3.	Lehigh Valley Coal Company.	do.	J. F. Marstellar.	do. do.
St. Mary's Nos. 1, 2, 3, 4 and 5.	St. Mary's Coal Company.	Elk.	Joseph Eddy.	St. Marys, Elk county.
Tannerdale.	do. do.	Elk.	do.	do. do.
Williamsport Nos. 1, 2 and 3.	Clearfield Coal Company.	Clearfield.	A. K. Jacobs.	Tyler, Clearfield county.
Glen Fisher.	Elk Coal and Coke Company.	Elk.	W. H. Taylor.	Glen Fisher, Elk county.

TABLE II—*Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Fourth Bituminous District for the year ending December 31, 1891.*

NAME OF COLLIERIES.	Location—County.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs of powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Antrim Nos. 1 and 2.	Tioga.	233,278		121,492	218	547				4	25	2	
Arnot Nos. 1, 2 and 3.	do.	295,572	1,982	289,849	269½	618		2	2,126	3	51	2	250
Bear Run.	do.	49,292		49,042	252½	98			351	2	6	1	
Barclay Nos. 1, 2 and 3.*	Bradford.												
Beechtree No. 2 and 3.	Jefferson.	230,375		208,013	247	310				1	20		
Brock mines.	do.	34,755		22,114	250	96					4		
Cameron.†	Cameron.												
Cascade No. 1 and 2.	Elk.	83,761		83,600	299	151		1			6	1	
Clarion Nos. 1 to 7.	Jefferson.	271,959		270,103	198	420		3	1,365	1	36	1	
Clermont.*	McKean.												
Coal Glen No. 1 and 2.	Jefferson.	171,000		170,000	246	235		1	1,250	3	15	1	
Cato.‡	Centre.												
Dagus mines Nos. 1 to 26.	Elk.	305,641	2,500	303,365	211	570			1,420	9	42	4	36
Dixon.	Clearfield.	50,825		50,136.55	200	49	1				4		
Elbon.§	Elk.												
Fall Brook Nos. 1 and 6.	Tioga.	76,994		76,955	273	168				1	23	2	
Fountain colliery.*	Centre.												
Gurnee Nos. 1, 2 and 3.	Tioga.	5,791		4,832	225	12			38		1		
Hazel Dell.	Elk.												
Helvetia.	Clearfield.	94,921.8		91,484	265	151			700	4	21		
Instanter.	McKean.	15,737		15,254	295	31			1	2		1	
Kettle Creek Nos. 1 and 2.	Clinton.	131,619		131,619	206	200	1	1	100		18	2	
London.	Jefferson.	84,683.45		84,683.45	201	130					6		
Long Valley.	Bradford.	68,697		67,721	228	169	1		650	1	28		
Lucas Hill.	Centre.	15,972		15,972	117	23					2	1	
Morris Run Nos. 1, 2 and 3.	Tioga.	330,332			219½	556		1		4	37		
Mead Run.	Elk.	159,984		159,281	220	280	1	3	1,503	3	19	1	
Mines A and B.	Centre.	46,000		46,000	150	159					3		

Renovo,*																		
Red Run,*	Clinton.																	
Rochester,	Lycoming.	411,600			403,000	199	600											
Sandy Lick,	Clearfield.	129,754			129,754	130	303		2	1,600	6	49						
Shawmut Nos. 1, 2 and 3,	do.	72,235			71,335	215	184		1	500		17						
Snow Shoe Nos. 1 and 2,	Elk.	43,811			43,811	230	58					13						
Sonnerville,	Centre.											4						
Sugar Camp Nos. 1, 2 and 3,	do.	203,657			95,434	223			1									
St. Mary's Nos. 1, 2, 3, 4 and 5,	do.	111,921			111,921	308	160		1	144		12		1			200	
Tamarindo,	Elk.	5,516			5,516	89	20					2						
Williamsport Nos. 1, 2 and 3,	Clearfield.	66,162			13,766	241	149			450	2	16					100	
Glen Fisher,		22,000			12,000	100	90			100	1	9					100	
Total,		3,834,646.25		108,026.01	3,178,052.01	6,575.5	6,767	6	16	11,298	45	513	21	1	1	1	486	

* Exhausted.
† Not operating.
‡ No report received.
§ Just commenced to operate.
‖ Included in report of Cascade Nos. 1 and 2 mines.
• New mine.

25–12–91.

TABLE III.—*Showing the number of each class of Employes at each Colliery in the Fourth Bituminous Mine District, during the year 1891.*

NAMES OF COLLIERIES.	Location County.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand totals inside and outside.
		Inside foremen or mine-boss.	Miners.	Miners' boys.	All company men.	Drivers and runners.	Doorboys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slatepickers.	All company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Antrim Nos. 1, 2 and 3.	Tioga.	3	307	57	9	27	18	421	2	8	6	66	8	6	96	517
Arnot Nos. 1, 2 and 3.	do.	1	347		33	56	35	472	1	6	2	80	50	7	146	618
Bear Run.	do.	1	72		4			77	1	4	3		8	1	17	94
Barclay Nos. 1, 2 and 3.*	Bradford.															
Beechtree Nos. 2 and 3.	Jefferson.	1	266		4	10	5	286		2	1		7	2	12	298
Brock.	do.	1	70			9		80		2			12	2	16	96
Cameron.†	Cameron.															
Cascade Nos. 1 and 2.	Elk.	1	115	14		6		136	1	3	1		8	2	15	151
Clarion Nos. 1 to 7.	Jefferson.	3	339		7	24	2	375	1	6	3	1	32	3	46	421
Clermont.†	McKean.															
Coal Glen Nos. 1 and 2.	Jefferson.	1	162	36	7	10		216	1	2	2		13	2	20	236
Cato.‡	Centre.															
Dagus mines Nos. 1 to 26.	Elk.	5	350		9	27	1	392	1	18	8	3	144	4	178	570
Dixon.	Clearfield.	1	36		1	4	1	43		1			3	2	6	49
Elbon.§	Elk.															
Fall Brook Nos. 1 and 6.	Tioga.	2	100	14	5	17	7	145	2	3	4	11		4	23	168
Fountain Colliery.*	Centre.															
Gurnee Nos. 1, 2 and 3.	Tioga.		8		1	1		10					1	1	2	12
Hazel Dell.	Elk.															
Helvetia.	Clearfield.	1	83		42	7	1	134		3	6		6	2	17	151
Instanter.	Centre.	1	24		2	2		29			2		1		3	32
Kettle Creek Nos. 1 and 2.	Clinton.	1	150	50	20	9	3	233		3	1	2	13	2	21	254
London.	Jefferson.	1	112		2	5	2	122		1			5	2	8	130
Long Valley.	Bradford.	1	87		4	12	8	112	1	2	1	5	44	3	57	169
Lucas Hill.	Centre.	1	20		1	1		23								23
Morris Run Nos. 1, 2 and 3.	Tioga.	3	370		55	35	30	493	1	6	4	33	12	7	63	556
Mead Run.	Elk.	2	225		4	14		245	1	4	3	1	24	2	35	280
Mines A and B.	Centre.	1	42	1	2	3	1	150	1	1		2	3	2	9	59
Renovo.*	Clinton.															
Red Run.*	Lycoming.															
Rochester.	Clearfield.	1	500		8	47	12	568	1	5	6		17	3	32	600

Sandy Lick,																														
Shawmut Nos. 1, 2 and 3,	do.		1																											
Snow Shoe,	Elk,		1	254		4	17	4	280			1			10			11	291										
Sommerville,	Centre,		1	136		5	9	3	154			4			25			50	184										
Sugar Camp Nos. 1, 2 and 3,	do.			40	4	4	3		52			2			2		2	5	57										
St. Marys Nos. 1, 2, 3, 4 and 5,	do.																													
Tannerdale,	Elk,		1	222		5	10	4	242	2		3			72		3	83	325										
Williamsport Nos. 1, 2 and 3,	Elk,		1	120		6	10	1	138	1		2			15		4	23	161										
Glen Fisher,	Clearfield,		1	20		1	1	1	24								1	1	25										
	Elk,		1	90		4	8	1	104	1		2			38		2	45	149										
Total,			1	90					91										91										
			41	4,757	176	249	384	140	5,747	19		94	62	204	571	70	1,020	6,767											

* Exhausted.
† Not operating.
‡ No report received.
§ New mine just commenced operations.
‖ Included in report of Cascade Nos. 1 and 2 mines.
• New mine.

TABLE IV—*List of Fatal Accidents occurring in and about the Mines of the Fourth Bituminous Mine District for the year ending December 31, 1891.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	Number of orphans.	Name of Colliery.	Location County.	Nature and Cause of Accident.
Aug. 2.	John Thomas.	Miner.	55	M.	3	Dixon.	Clearfield.	Instantly killed by fall of roof.
Sept. 10.	Gust Anderson. . . .	Miner.	24	S.	. .	Kettle Creek. . . .	Clinton.	Killed by fall of coal. He had mined the coal in his room to a depth of six feet and about sixteen feet across the whole face, and had fired a shot in it about ten minutes prior to the accident; but the powder having failed to do its work he had what is known as a hanging shot. The hanging coal was left in a much shattered condition, and instead of using a little extra labor to make himself safe he deliberately lay down in front of it and began to "bear in." He had just begun to mine or undercut the coal, when the loose mass fell, completely burying him, resulting in death about three hours after the accident.
Nov. 5.	George Stoffer.	Miner.	16	. .	. .	St. Marys.	Elk.	Killed by fall of roof through neglect in not standing sufficient props.
Nov. 27.	Victor Swanson.	Mine foreman.	39	M.	5	Mead Run.	Elk.	Accidently killed by fall of slate while repairing mine pump.
Dec. 2.	Andy Plunka.	Miner.	23	S.	. .	Sugar Camp No. 3. .	Centre.	Killed instantly by fall of coal; after firing shot it failed to come down, and he undertook to undermine it further without putting in necessary sprags, when the whole mass fell upon him with the above result.
Dec. 8.	John W. Wilson.	Miner.	43	M.	17	Long Valley. . . .	Bradford.	Killed by fall of roof coal and stone while loading a car.

Table V—*List of Non-Fatal Accidents occurring in and about the mines of the Fourth Bituminous Mine District for the year ending December 31, 1891.*

Date of accident.	Name of Person.	Occupation.	Age.	Married or single.	Number of children.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
Jan. 5.	Martin McCarty,	Miner,	35	M.	1	Kettle Creek,	Clinton,	Leg broken by fall of coal.
13.	Louge Carainey,	do.	35	M.		Mead Run,	Elk,	Leg broken by fall of coal.
Feb. 13.	Charles English,	do.	45	M		Sandy Lick,	Clearfield,	Burned by an explosion of powder due to his own carelessness in filling a cartridge with a lighted lamp on his head.
May 19.	George Emmett,	do.	38	M.		Cascade No. 1,	Elk,	Collar bone broken by fall of coal.
June 19.	William Longbough,	Driver,	17			Clarion No. 2,	Jefferson,	Lost finger while spragging mine cars.
July 2.	Luce Stubbs,	Miner,	39	S.		Rochester,	Clearfield,	Back hurt by fall of stone.
11.	Camy Partola,	do.	38	S.		Mead Run,	Elk,	Leg broken by fall of coal.
21.	Rony Delullo,	do.	40	M.		do.	Elk,	Collar bone broken by fall of coal.
31.	Peter Swanson,	do.	52	M.		Clarion No. 2,	Jefferson,	Had his foot broken while assisting driver to get his trip made up.
Sept. 12.	Ben Roberts,	do.	56	M.	8	Arnot,	Tioga,	Back injured by fall of coal.
12.	William McCrocken,	do.	50	M.		Coal Glen,	Jefferson,	Leg broken by fall of coal.
Nov. 13.	William Booth,	do.	17			Morris Run,	Tioga,	Back injured seriously by fall of coal.
19.	Andy Chambers,	Roadman,	41	M.		Sugar Camp No. 3,	Centre,	Arm dislocated by being thrown from a mule.
24.	Jacob Dalsted,	Miner,	27	M.		Arnot,	Tioga,	Arm broken by fall of coal.
Dec. 2.	Frank Crock,	do.	38	M.		Clarion No. 1,	Jefferson,	Arm broken by fall of coal.
31.	William Ellis,	Trackman,	45	M.		Rochester,	Clearfield,	Leg broken; while in the act of lifting props out of a car one accidentally fell with the above result.

FIFTH BITUMINOUS DISTRICT.

(FAYETTE AND SOMERSET COUNTIES.)

UNIONTOWN, *March 10, 1892.*

Hon. THOMAS J. STEWART, *Secretary of Internal Affairs:*

SIR: I have the honor of submitting my report of the inspection of mines of the Fifth bituminous district for the year ending December 31, 1891.

The production of coke for the year was 3,117,831 tons, being 840,663 tons less than in the year 1890.

The great strike in the Connellsville coke region which commenced February 9 and continued until the middle of May was the cause of the falling off in the production and was also the cause of the loss of several lives and much destitution and suffering from which the region has not yet fully recovered.

I am glad to report that the fatal accidents are 28 less, and the non-fatal 6 less in number this year than they were in 1890.

The following is a list with their causes:

	Fatal.	Non-fatal.
By falls of roof,	11	21
By mine wagons,	6	15
By mine fire,	3	. . . . .
By gas explosion,	2	. . . . .
By cages and falling down shaft,	2	1
By shot firing,	. . . . .	5
Total,	24	42

It will be observed that the majority of the accidents, both fatal and non-fatal, occur in rib or pillar workings while the miners are engaged in drawing their timber. In my opinion many of these accidents could be prevented by having a competent person (say one of the roadmen) appointed to oversee this dangerous part of the work and allow no miner to draw his timber unless such person is present.

The condition of a majority of the mines in Fayette county has been greatly improved during the year, but I am compelled to say that the operators in Somerset county are slow in providing appliances for ventilating their mines, owing I suppose to the fact that their mines do not generate fire-damp in dangerous quantities.

The following is a summary of this report:

Number of mines in the district,	89
Number of tons of coal mined,	5,463,801
Number of tons of coke produced,	3,117,831
Number of tons of coal shipped,	780,504
Number of persons employed inside,	6,347
Number of persons employed outside,	4,012
Total number of persons employed,	10,359
Number of coke ovens reported,	10,190
Number of fatal accidents,	24
Number of non-fatal accidents,	42
Number of wives made widows by above fatalities,	15
Number of orphans from same cause,	50
Number of tons of coal produced per life lost,	227,658+
Number of persons employed per life lost,	431
Number of persons employed per non-fatal injury,	246

Accompanying this report are two photographic views of the steel head-gear of Leisenring No. 2, together with a letter from J. H. Paddock, chief engineer of the H. C. Frick Coke Company, giving dimensions and comparative cost of the same. Also a plan of the workings of the Oliver mine No. 1 and Columnar sections of shafts Nos. 1 and 2.

All of which is respectfully submitted.

WILLIAM DUNCAN,
Inspector of Mines.

The Cottage State Hospital for Injured Persons, located at Connellsville, has now been in operation for over a year, and its work has been a noble one. It is no exaggeration to say that it has saved many lives and much suffering during that period. Located in the geographical and railroad center of the great Connellsville coke region, with its 17,000 ovens and as many employes, it is easily accessible from all parts of the region it is intended to serve, and has been able to treat promptly and successfully the many mangled miners and railroaders brought there, many of whom under other conditions must have perished, there being no other hospitals accessible short of Pittsburg, fifty miles away. During the year 1891, 96 patients were treated. The cost of maintenance from the time of opening, January 26, 1891, to December 1, 1891, was $4,437.

The building was taken off the hands of the contractors, Calhoun & Co., of Connellsville, May 31, 1890, by the hospital commission, upon the cordial recommendation of Architect Windrim, who said: "The Connellsville hospital is by far the best hospital building I have inspected. It is more than up to the specifications." The Connellsville *Courier* of that date, describing the hospital, said:

"The hospital is located on the hill above the Coughenour Addition, in the Third ward, overlooking the greater part of the town. On the hottest summer day the balmy breezes play around the roomy porches that surround the building. The building itself is a picturesque Queen Anne structure. It consists of a main building of brick, flanked on either side by the wards. The latter are frame 42×25 feet each, with 15-foot ceilings. They are lighted by large windows and heated by steam, with a large open fire-place in each end. The ventilation is perfect, and to each is attached a bath room and closet. The main building is 36×62 feet, 2½ stories high. It contains an office and operating room, dining room, kitchen and pantry on the ground floor, and three sleeping rooms and bath room on the second. Under the main building is a laundry, furnace-room and cellar. Twenty patients can be comfortably accommodated in the hospital. The grounds are ample and will be handsomely ornamented."

Although $15,000 was available for the erection of the building the cost was kept down to $13,400 by careful management. The ground, two acres in extent, costing $2,000, was donated by Colonel J. M. Reid, a member of the commission, and since president of the board of trustees. The appropriation for furnishing and equipping the hospital was $5,000. Of this sum $4,500 was used, and this covered the cost of water mains and electric light wiring. The last legislature appropriated $4,650 for sundry improvements including an addition to the building for the accommodation of the help, an ice house, a coal house, improved plumbing, a sewer and for beautifying the grounds. One-half of this amount has been expended, and progress made with all the improvements save the matter of beautifying the grounds, which, not being a work of necessity, was postponed until the last. It will probably be done this year if funds can be raised to surround the grounds with a suitable fence, an appropriation for which was refused by the last legislature. The present value of the real estate is $18,500, and of the equipment, $4,500, making in all $23,000.

The property was transferred to the board of trustees, November 20, 1890, and the hospital was formally opened January 26, 1891. The present trustees are: J. M. Reid, Charles Davidson, Dr. T. H. White, Dr. George W. Neff, Dr. J. J. Singer, D. S. Atkinson, James McGee, Peter Wise and James Corrigan. The officers are: president, J. M. Reid; secretary, Dr. T. H. White; treasurer, Charles Davidson; superintendent, Miss A. R. Ferguson.

The surgical staff is composed of the following Connellsville physicians: Dr. E. Phillips, Dr. J. B. Jackson, Dr. J. C. McClenathan, Dr. D. R. Torrence, Dr. T. H. White, Dr. M. B. Shupe, Dr. G. W. Gallagher and Dr. Louis P. McCormick.

The following consulting surgeons have also been appointed:

Berlin, Dr. Gorman.
Broad Ford, Dr. R. S. Reagan.
Brownsville, Dr. Jackson.
Brownsville, Dr. Shoemaker.
Confluence, Dr. Tannehill.
Dawson, Dr. Shoemaker.
Dunbar, Dr. Gaddis.
Greensburg, Dr. Kemmerer.
Greensburg, Dr. Offit.
Leisenring, Dr. M. Deihl.
Masontown, Dr. G. W. Neff.
Mount Pleasant, Dr. Marsh.
Mount Pleasant, Dr. Myers.
Mount Braddock, Dr. Smith.
Myersdale, Dr. L. S. Good.
Perryopolis, Dr. J. S. Davidson.
Rockwood, Dr. Masters
Scottdale, Dr. Strickler.
Scottdale, Dr. Rogers.
Smithton, Dr. Patton.
Somerfield, Dr. Jacobs.
Somerset, Dr. Kimmell.
Stonerville, Dr. Sherrick.
Uniontown, Dr. W. H. Sturgeon.
Uniontown, Dr. J. B. Ewing.
Upper Middletown, Dr. Hopwood.
Ursina, Dr. Kuhlman.
Vanderbilt, Dr. Hazlett.
West Newton, Dr. Vankirk.
West Newton, Dr. Robinson.

The surgeons all serve gratuitously. The eight resident surgeons divide themselves into four relays, each relay serving actively for three months. In difficult cases or delicate operations the entire staff may be called together for consultation. The consulting surgeons look after cases arising in their immediate localities, giving them such temporary treatment as may be urgently necessary, and seeing that they are properly and promptly forwarded to the hospital.

There was some criticism of the hospital management during the year, but a careful and searching investigation by the state authorities showed the complaints to have been without foundation; that, on the contrary, the management had been exceptionally wise and thoroughly honest.

H. C. FRICK COKE COMPANY'S MINES.

Adelaide mine.—Shaft opening located on the Pittsburg, McKeesport and Youghiogheny railroad. This mine is operated in accordance with the latest approved methods of mining. All double entries and split air-current. A new air shaft has been sunk during the year and a 20-foot fan put in operation, which gave, December 14, 1891, a volume of 106,400 cubic feet per minute with a velocity of 48 revolutions, whereas, the smaller fan which was removed gave, May 22, 1891, a volume of 31,500 cubic feet per minute with a velocity of 60 revolutions per minute. This mine is well ventilated and in good condition in every respect. Number of visits during the year, three. Mining-boss, T. Harris.

HEAD FRAME.

STEEL HEAD FRAME.

Davidson Shaft.—Located on the P. S. W. R. R., near Connellsville, Pa. The ventilation of this mine has been very much improved this year by removing the small fan and putting in a larger one 20 feet in diameter, which gives an abundance of air which is well distributed through the mine by split air-currents. I visited this mine three times during the year and found the general condition good. Mining-boss, C. Stillwagon.

Eagle and Summit Nos. 1, 2 and 3.—Located on the Mt. Pleasant branch of the Baltimore and Ohio railroad. All combined and operated under one system of ventilation. A new fan was erected and the furnace ventilation discontinued. My last measurement gave, November 12, 1891, 44,000 cubic feet at outlet and 2,400 cubic feet at head of No. 6 butt C flat. The general condition of this mine is good. Mining-boss, Edward Mooney.

Fountain Mine.—Owned by H. C. Frick Coke Company, but operated by E. A. Humphries, lessee. This mine has done very little during the year on account of a mine fire which has finally been extinguished, and the mine is now in very fair condition. Mining-boss, George Armstrong.

Henry Clay Mine.—Slope opening. Ventilated by a fan 12 feet in diameter which gives an average volume of air 35,000 feet per minute. This mine is well conducted and in good order both as to ventilation and drainage. Mining-boss, John Keck.

Kyle Mine.—Located near Fairchance. Drift opening. Ventilated by Brazil fan 12 feet in diameter which gives an average volume of 35,000 feet per minute. Split air-currents by means of brick overcasts and double entries. This mine was in good condition on my last visit, December 8, 1891. Mining-boss, J. W. Reckard.

Leith Mine.—Located near Uniontown. Shaft opening. Ventilated by a 20-foot Guibal fan. The ventilation in this mine has been very much improved during the year by building brick overcasts and splitting the air-current, thereby increasing the volume from 60,000 feet to an average of 108,000 cubic feet per minute. There has been a new opening made near the outcrop which enables the men to enter or leave the mine without depending upon the machinery. The water is now pumped from the dip workings of this mine by compressed air instead of steam which was formerly used and which was a great injury to the soft roof with which this mine is troubled. The general condition of the mine has been much improved during the year. Mining-boss, Thomas Hooper.

Mr WILLIAM DUNCAN, *Inspector of Mines:*

The accompanying photograph represents the new steel head frame and bins erected at Leisenring shaft No. 2. This shaft is located at Bute Station on a branch of the Pittsburg, Virginia and Charlestown railway, and on the eastern side of the Connellsville basin. The depth of the shaft is 397 feet. There are 500 ovens at the plant and the daily capacity of the shaft is about 1,500 tons.

The old tower was in bad shape and it was decided late in the summer to tear down the old work and rebuild it. After some discussion it was determined by the general manager, Mr. Thomas Lynch, that the structure should be rebuilt in steel. The works were closed down on the 10th day of August, 1891. Plans of the new structure were given to the Keystone Bridge Company of Pittsburg, to whom this contract was awarded. The old structure was torn down and removed. Two hundred and sixty cubic yards of solid masonry were laid for piers and shaft coping, forty feet of the shaft re-timbered and the whole structure made and erected by the 1st day of January, 1892, in condition for operating the works. The total height of the structure is 84′; the length 116′, with an average width of 41′.

The head frame proper consists of two vertical bents, each formed of one center plumb post and two inclined posts, the batter of posts being one and one-half inches per foot. The distance from center post to either batter post is 17′ $3\frac{3}{4}$″ at the base and 7′ 9″ at the top. The distance from center of either bent being 22′. The posts are 8″ "Z" bar columns, formed of 4–4″ × $\frac{1}{4}$″ "Z" bars, connected by a web plate 6″ × $\frac{1}{4}$″ extending the full length of the column. The cross-bracing 6″ × 8″ channels latticed. Tie rods 1″ to $1\frac{1}{4}$″ round iron. The counter braces connecting the main brace and the tower are formed of 4–3″ × $3\frac{1}{2}$″ × $\frac{1}{4}$″ angles latticed and securely braced. The coal bin is constructed primarily of three rows of "Z" bar columns similar to those used in the tower, resting on heavy stone piers. The size of coal bin inside is 28′ × 36′ and 20′ in height, having a capacity of about 500 tons. The floor is carried on 20″ "I" beams, which beams are supported by the "Z" bar columns. One of the main features of the bin is the arrangement adopted for ready repairing.

Extending the full length of the "Z" bar posts and also along the intermediate "I" beam columns (secured by channel girts to the main posts) are angles riveted so as to form grooves into which are placed short lengths of three-inch oak plank, forming a tight and solid wall. This construction admits of a ready renewal of the sides of the bin by sawing out the plank and renewing part or all at one time, as may be necessary. The frame of the house over the structure is of light iron trusses, the whole being covered by galvanized corrugated iron. The total weight of steel in the head frame is 111,832 pounds; total weight of steel in the bin, 102,043 pounds; house, 17,727 pounds; total, 231,602 pounds.

To the best of our knowledge this was the first structure of the kind west of the Allegheny mountains. The appearance is neat and substantial. We see no reason why it will not last as long as the mine, which will probably be for fifty years.

Mr. H. L. Auchmuty, the principal assistant engineer of the company, worked up most of the details of this structure.

The cost, as compared with first-clas yellow pine, was very little in excess.

J. H. PADDOCK,
Chief Engineer H. C. Frick Coke Company.

Leisenring No. 1 Shaft Opening.—Ventilated by a fan which gave, October 19, 1891, a volume of air of 115,070 cubic feet, which was well carried forward to the face of the workings by means of brick over-casts and double entries. The bottom of the shaft and buildings on top are lighted by electric glow lamps. This mine has undergone a complete overhauling and is now one of the best in the region, everything being in No. 1 order. Mining-boss, Charles Walters.

Leisenring Shaft No. 2.—Located on the Pittsburg, Virginia and Charlestown railroad. Ventilated by a 20′ Guibal fan. The air shaft has been enlarged and re-lined throughout. Rebuilt head-frame and derrick with steel, and put in electric lights at the bottom of shaft and in the buildings on top. It is now as well equipped as any mine in the region, having a ventilation of 112,000 cubic feet. Mining-boss, Bernard Callaghan.

Leisenring Shaft No. 3.—Located on the P. S. W. R. R. Opened on scientific principles and ventilated by a 25′ Guibal fan, giving a volume of 151,920 cubic feet per minute. Mining-boss, Walter O'Malley.

Oliver Mine.—Located on the P. S. W. R. R., at Oliphant station. This mine has been very much improved during the year. A new fan 16′ in diameter has been erected by Kenney & Co., of Scottdale, which gave, December 30, 1891, a volume of 38,880 cubic feet of air per minute. I visited this mine four times during the year and found it gradually improving, and at the end of the year it was in good condition. Mining-boss, John Harris.

Plumer Mine.—Connected with Davidson shaft and supplies coal to the same ovens, but it is ventilated by a separate fan 12′ in diameter, which gives an average volume of 70,950 cubic feet of air per minute, which is well distributed throughout the mine by masonry overcasts and split-air currents. I have always found this mine in good condition and the miners well provided for. Mining-boss, George Roebuck.

Rist Mine.—Slope opening. A new fan and brick overcasts have been erected during the year. Ventilated by the split-air current system. On the date of my last visit, October 5, 1891, I measured 57,680 cubic feet ot the outlet and 23,310 cubic feet at the head of the first section, showing that the air is well carried forward in the workings. The mining law is well obeyed and the drainage and roads in good condition. Mining-boss, Charles Wingenwroth.

Sterling Mine No. 1.—Drift opening on the main line of the Baltimore and Ohio railroad. Fan ventilation. The new parts of the mine are being worked on the double-entry system. This mine is in very fair condition in all respects. Mining-boss, Richard Rowley.

Sterling Mine No. 2.—Drift opening and rope haulage. A fan has been erected for the new workings of this mine, but the furnace is still used to keep the old workings clear of foul gases. In the new workings, which are separate from the old, I measured a volume of 44,800 cubic feet of air, and in the old workings, 13,500 cubic feet. The general condition of this mine as to drainage and ventilation is fully up to the requirements of the law. Mining-boss, John W. Patterson.

Tip Top Mine.—Drift opening, double entries and fan ventilation. I cannot say much about the condition of this mine, as it has been idle during the entire year.

Trotter Mine.—Shaft openings, double entries and fan ventilation. This mine is connected with the Adelaide mine, which it drains. This is a large mine, usually employing 230 men inside. My last measurement showed 74,985 cubic feet at inlet and 75,760 cubic feet at outlet. The mine was in good condition. Mining-boss, William Callaghan.

Valley Mine.—Drift opening, rope haulage and a 12′ fan, located in the mine, which gave, September 18, 1891, 52,880 cubic feet of air at the outlet, and 28,800 cubic feet on upper No. 4 near the face of the workings. I have only been able to visit this mine twice during the year but I have found it to be in excellent condition. Mining-boss, James Jackson.

White Mine.—Drift openings, double entries and fan ventilation. I measured, October 20, 1891, 44,240 cubic feet of air at the fan outlet and 5,364 cubic feet on the 14th butt heading. The mining law in regard to white-washing safety holes is better observed in this mine than in any other mine in the region. Drainage and hauling roads good. Mining-boss, John Grumbly.

Wynn Mine.—Slope opening, rope haulage and fan ventilation. December 9, 1891, I measured a volume of 13,200 cubic feet of air on No. 1 butt, 3d flat left. This mine has been idle the most of the year, only having worked nineteen days. The condition of the mine was good considering that it had been filled with water for one year. Mining-boss, J. M. Franklin.

Youngstown Mine.—Slope opening, double entries and fan ventilation. Owned and operated by the Youngstown Coke Company, but under the general management of the H. C. Frick Coke Company. There has been quite an improvement made in the ventilation of this mine during the year by putting in brick overcasts and splitting the air current.

A new pumping station has been built and the steam is conveyed to and from the pumps through bore holes thus avoiding the great heat in the mine which proves to be a great advantage as they are troubled considerably by bad roof and irregular dips, but altogether the mine is in very fair condition. Mining-boss, Mark Watson.

Redstone Mine.—Owned and operated by the Redstone Coke Company but under the same general management as the above mine. Slope openings, double entries and fan ventilation. Volume of air at outlet,

October 13, 1891, 97,200 cubic feet in the lower slope. Upper slope 33,360 cubic feet. This mine is in very good condition both as to ventilation and drainage. Mining-boss, Elijah Parker.

McCLURE COKE COMPANY'S MINES.

Coal Brook Mine.—Drift opening and natural ventilation. October 28, 1891, I measured 13,920 cubic feet of air entering the mine and it was well carried forward into the workings. The drains and roads were in good order and everything about the mine indicated that the operators were willing to comply with the requirements of the law. Mining-boss, M. F. Pickard.

Diamond Mine.—Located at McClure Station on the Mt. Pleasant branch of the Baltimore and Ohio railroad. Drift opening and connected with Painter mine but ventilated by an independent furnace. This mine has been idle since February 9, 1891, the commencement of the great strike in the coke region. Condition of the mine very fair. Mining-boss, William H. Ambler.

Lemont Mine No. 1.—Slope opening, and is now worked on the double-entry system. When first opened it was worked on the "indefinite system" and the present management find it hard to restore that which has been destroyed. They are now driving two new air courses to the outcrop, which will improve the condition of the mine very much. It is ventilated by the split air current system. An eighteen-foot fan giving August 10, 1891, a volume of 15,000 cubic feet on right split and 16,120 cubic feet on left split. General condition of the mine as to drainage and supplies very fair. Mining-boss, John J. Maloney.

Lemont Mine No. 2.—Slope opening with double track and double entries. This mine was opened upon good scientific principles under the direction of Mr. Miller, a competent mining engineer. Ventilated by a 20-foot Guibal fan and split air currents. The water is discharged from the mine through a bore-hole thus avoiding the necessity of long lines of steam pipes in the mine which are a continual source of danger. Mining-boss, Elias Phillips.

Painter Mine.—Located on the Mt. Pleasant branch of the Baltimore and Ohio railroad. A new drift opening has been made during the year and a large furnace, 58½ feet long, 6 feet 2 inches clear above the grate bars, has been built since my last visit. This mine was formerly ventilated by two small furnaces. My last measurements, September 2, 1891, showed a volume of 29,640 cubic feet at one furnace and 13,640 cubic feet at the other. This mine is in good order. Mining-boss, George Stantmyer.

Atlas Mine is operated by Isaac Taylor, lessee from Cambria Iron Company. This mine is located near Dunbar, and is a slope opening ventilated by a fan which is too small, it only giving on the date of my last visit, December 1, 1891, 18,360 cubic feet per minute, which is not

enough for this mine. Average number of persons employed inside, forty-six. There is considerable squeeze on the workings, and they have had some trouble this year with a fire of long standing on the left of the manway, but withal the mine is in very fair condition, and the managers are doing all they can to make it safe. Mining-boss, Charles Trew.

Anchor Mine.—Owned and operated by the Atchison Coke Company. Ventilated by 12′ Brazil fan, which gave a volume of 20,720 cubic feet per minute on date of my last visit. The solid coal of this mine has been exhausted and they are now engaged on rib workings, consequently are troubled with a great many falls. Under the circumstances the mine is in fair condition both as to ventilation and drainage. Mine-boss, John Mathison.

Berlin Mine.—Located on Berlin branch of the Baltimore and Ohio railroad, operated by B. D. Morgan & Co., was idle at the time of my last visit, but everything was in fair order. Mining-boss, C. J. Baker.

Buffalo Mine.—Located on the same branch as above mine, owned by the Buffalo Coal and Coke Company. This is the only mine in Somerset county that is ventilated by a fan, and on July 13, 1891, I measured 11,000 cubic feet of air in circulation, and the drainage and hauling roads were in good condition. Mining-boss, Benjamin Marsden.

Baltimore and Ohio Mine.—Situated in Connellsville, owned by the Baltimore and Ohio Railroad Company, but operated by W. P. Stillwagon & Co. The product of this mine is all used in coaling the locomotives. It is a drift opening and has natural ventilation and consequently is not well ventilated, but roads and drainage in good order.

Chester Mine is a slope opening on the Brownsville branch of the P. V. and C. R. R., owned by E. A. Humphries & Co. Natural ventilation. Commenced mining coal in April, 1891. I visited it twice and found it in very fair condition. Volume of air circulating July 20, 1891, 1,680 cubic feet. Mining-boss, John Gray.

Cumberland and Elk Lick Mine.—Located on Salisbury branch of Baltimore and Ohio railroad, near Meyersdale, Somerset county, is owned by the Cumberland and Elk Lick Coal Company. Furnace ventilation. Average quantity of air circulating, November 28, 1891, 31,200 cubic feet and well distributed. I have always found this mine in very fair condition and the mining laws strictly obeyed by the officers in charge. Mining-boss, James Philips.

Cora Mine is located on a branch of the Baltimore and Ohio railroad, near Dawson. Owners, J. Newmyer & Sons. Drift opening and natural ventilation. Drainage rather poor owing to the light covering over the coal, which is constantly letting in the surface water. Mining-boss, T. S. Hepplewhite.

Cassellman Mine is located on the Baltimore and Ohio railroad, near Garrett, Pa. Owners, Cassellman Coal Company. Slope opening. The

furnace ventilation is very unsatisfactory, but the superintendent is now making arrangements to put in a fan, which I hope will be done, as it is very much needed. Drainage fair. Mining-boss, Wm. Phenniecie.

Cochran Mine.—This mine does not come under the provisions of the law, as there were only seven men employed when I visited it, but found it in fair condition.

Cumberland and Elk Lick Grassy Run Mine.—This mine has been well opened and is judiciously managed at present, but will soon have to be abandoned owing to an upheaval in the strata, making it impracticable to drain or work the coal from the present opening. Mining-boss, Wm. K. Murray.

Clarissa Mine.—Owned by James Cochran Sons & Co. Drift openings and natural ventilation, consequently not very reliable, but on my last visit, November 13, 1891, I measured 6,720 cubic feet entering the one opening, and 6,400 cubic feet the other, fairly carried forward into the working places. Drainage good. Mining-boss, J. C. Moore.

Cumberland and Summit Nos. 1 and 2.—Located on the Meyersdale branch of the Baltimore and Ohio railroad. Owned and operated by the Cumberland and Summit Coal Company. No. 1 is working the eight-foot seam of coal, and No. 2 is in the four-foot vein about 60 feet above No. 1. The coal from No. 2 is run down an incline to the mouth of No. 1, and from there the coal from both is run down the same plane. Ventilation in both mines weak and irregular. No. 1, 2,880 cubic feet of air in circulation, and 4,800 cubic feet in No. 2. Drainage in both mines fair. Mining-boss and superintendent, Fred. Rowe.

Cal. T. Hay Mine is located on the Grassy Run branch of the Baltimore and Ohio railroad. Drift opening, and there is supposed to be furnace ventilation, but I have always failed to find any fire in the furnace, and from its appearance I would judge there had not been any in it for two years at least, but they have made another air shaft near the face of the workings and the general condition of the mine has been improved. Mining-boss, Robt. Easton.

Dexter Mine is in poor condition both as to ventilation and drainage. On the date of my last visit, September 16, 1891, Mr. S. R. Fairchild, the mining-boss, promised to have it put in better order, but I understand that at the present time the mine is drowned out. A good fan and pump would be a great advantage to this mine.

Elm Grove Mine is located on a branch of the Baltimore and Ohio railroad. Owner, W. T. Rainey. Slope opening ventilation by radiation from steam pipes. Volume of air December 11, 1891, 1,680 cubic feet. Condition of mine is fair. Mining-boss, Alex. McCanch.

Franklin Mine.—Drift openings and furnace ventilation. I have always found this mine in very good condition. On my last visit, November 12, 1891, I measured 25,200 cubic feet of air in circulation and

well distributed. Drainage excellent. Owned by B. F. Kiester & Co. Mining-boss, Samuel Barnum.

Fort Hill is located on the McKeesport and Youghiogheny railroad. Owned by W. J. Rainey. Fan ventilation in the slope portion of the mine. The drift portion is natural ventilation. Condition of the mine very fair and the mine law well obeyed. Mining-boss, Wm. Sloan.

Flog Hill and Fair View Mines.—These mines are joined together and I understand are under the management of one mining-boss, although I have never been able to find him in either mine and I have been there three days in succession, consequently I concluded the mine law was not well obeyed. The condition of these mines is rather poor but the superintendent, Mr. Thomas Reese, promised to have them put in better order. Reputed mining-boss, Thos. Counihan.

Grindstone Shaft is located on the Pittsburg, Virginia and Charlestown railroad at Grindstone station. It is owned by the Redstone Coal, Oil and Coke Company. A shaft opening 228′ deep well lined with brick and cement from top to bottom. The ventilation of this mine has been very much improved during the year by the erection of a large fan 16″ in diameter, engine 14′×36′, designed by H. W. Wilson, mechanical engineer, which is now giving an average volume of 60,000 cubic feet of air per minute. The mining is all done by electricity. The drainage fair. Mining-boss, J. F. Cook.

Grace Mines.—A fire broke out in this mine Sabbath afternoon, February 15, 1891, which totally destroyed the fan and fan-house, and necessitated the flooding of a great portion of the mine. Three persons lost their lives by this fire and only one of the bodies was ever recovered and one hand of one of the boys. The lower portion of the mine was considerably damaged by the fire and water, but it has been restored to its normal condition. A new fan has been erected which gives an average volume of from 25,000 to 30,000 cubic feet of air which is well carried forward to the working places. Mining-boss, John McDonald.

Great Bluff Mine.—Owned by E. A. Humphries & Co. Drift opening and natural ventilation. At the date of my last visit this mine was in very fair condition in all respects. Mining-boss, Fred. G. Smith.

Grassy Run.—Located on the Grassy Run branch of the Baltimore and Ohio railroad. Owners, Grassy Run Coal Company. There has been some improvement made in the ventilation by a new opening. My last measurement, November 14, 1891, showed 4,480 cubic feet in circulation. Drainage fair. Mining-boss, John Meager.

Home Mine.—Located on the P. S. W. R. R. near Everson. Owners, Stauffer & Wiley. This mine employs fewer than ten men, consequently does not come under the mining law.

Hamilton Mine.—Located on the Grassy Run branch of the Baltimore and Ohio Railroad. Owners, Hamilton & Cochran. Drift opening and natural ventilation. At the date of my last visit this mine was in very fair condition but was employing fewer than ten men.

Hill Farm Mine.—Owned by the Dunbar Furnace Company. Work has been going on night and day for the entire year endeavoring to restore the mine to its normal condition, and to recover the bodies of the unfortunate victims of the fire which occurred June 16th, 1890. It has been a Herculean task to reopen this mine, as there was a great deal of fire to contend with as well as enormous falls of roof. The management certainly deserves credit for its perseverance and care in this dangerous undertaking. There has not been one person seriously injured during the year. They are now down to the fatal overcast, and the prospects are good for recovering the bodies at an early day. I visit this mine very frequently, owing to the dangerous nature of the work. I always find either Superintendent Robert Lang or Mr. Hugh Doran overseeing the work.

Junction Mine.—Drift opening and natural ventilation. On my last visit I found it in good condition notwithstanding that the coal was nearly exhausted. The mine was finished and permanently abandoned September 29th, 1891.

Jackson Mine.—Drift mine and natural ventilation. The fan was taken away to assist in overcoming the fire which occurred in Grace mine February 15th, 1891, but it has been returned, and will soon be in use again. On October 21st, 1891, I measured a volume of 12,480 cubic feet of air in circulation by natural forces. The general condition of the mine was good. Mining-boss, John Huston.

Keystone Mine.—I visited this mine July 2d, 1891, but found that it had been abandoned in June, owing to being drowned out, and I have since learned that it will be entirely dismantled because of its unfavorable location. Mining-boss, William Ledger.

Larimer or Banning mine.—Located on the Pittsburg, McKeesport and Youghiogheny railroad. Owned and operated by the Morgan, Moore and Bane Company, of Cleveland, Ohio. This mine has been reopened in a new place and very extensive improvements made. A rope haulage has been put in, and the small fan has been replaced by a larger one. I visited this mine three times during the year. At the time of my last visit it was idle on account of the improvements that were being made, but I found it in good condition both as to ventilation and drainage. Mining-boss, William Goldsboro.

Lynn, or Hanna Mine.—Located on the Redsone branch of the P. V. & C. R. R. Drift opening. Natural ventilation which was good owing to the main tunnel being driven through the hill. I measured 23,625 cubic feet in circulation. The drainage is fair, but the haulage roads are miserable and at least 100 years behind the age. I learned from the present mining-boss, John Statham, that a "T" iron track will be put in shortly.

Mt. Braddock Mine.—Owned by Robert Hogsett & Co. This mine was considerably improved after the Hill Farm disaster, but I am sorry

to say that during this year it has drifted back into even a worse condition than it was, notwithstanding all the promises that it would be put in better condition before my next visit, but as a general rule on my next visit I found a different mining-boss in charge, and this accounts for my predecessor describing it as being worked on an "indefinite system." The lower workings are still full of water and from present appearances are likely to remain so. The ventilation is produced by the heat radiated from the steam pipes and the temperature is so high on the slope haulage way that it is almost impossible to travel it. December 4, 1891, I found the ventilation and drainage bad in No. 1 butt dip. I requested the mining-boss, Mr. Henry Naylor, to have them remedied which he promised he would do if he could get the material. Altogether this mine is in a very unsatisfactory condition. Forty new ovens have been added to this plant, making 170 in all.

Morrell Mine.—Owned by the Cambria Iron Company, but operated by Isaac Taylor, lessee. Slope opening and worked on a good principle for ventilation. My last measurement gave a volume of 65,280 cubic feet at inlet and 14,000 feet at extreme dip workings. Drainage and roads good. Average number of persons employed inside, 225. All the provisions of the mining law are carefully observed. Mining-boss. John Yocum.

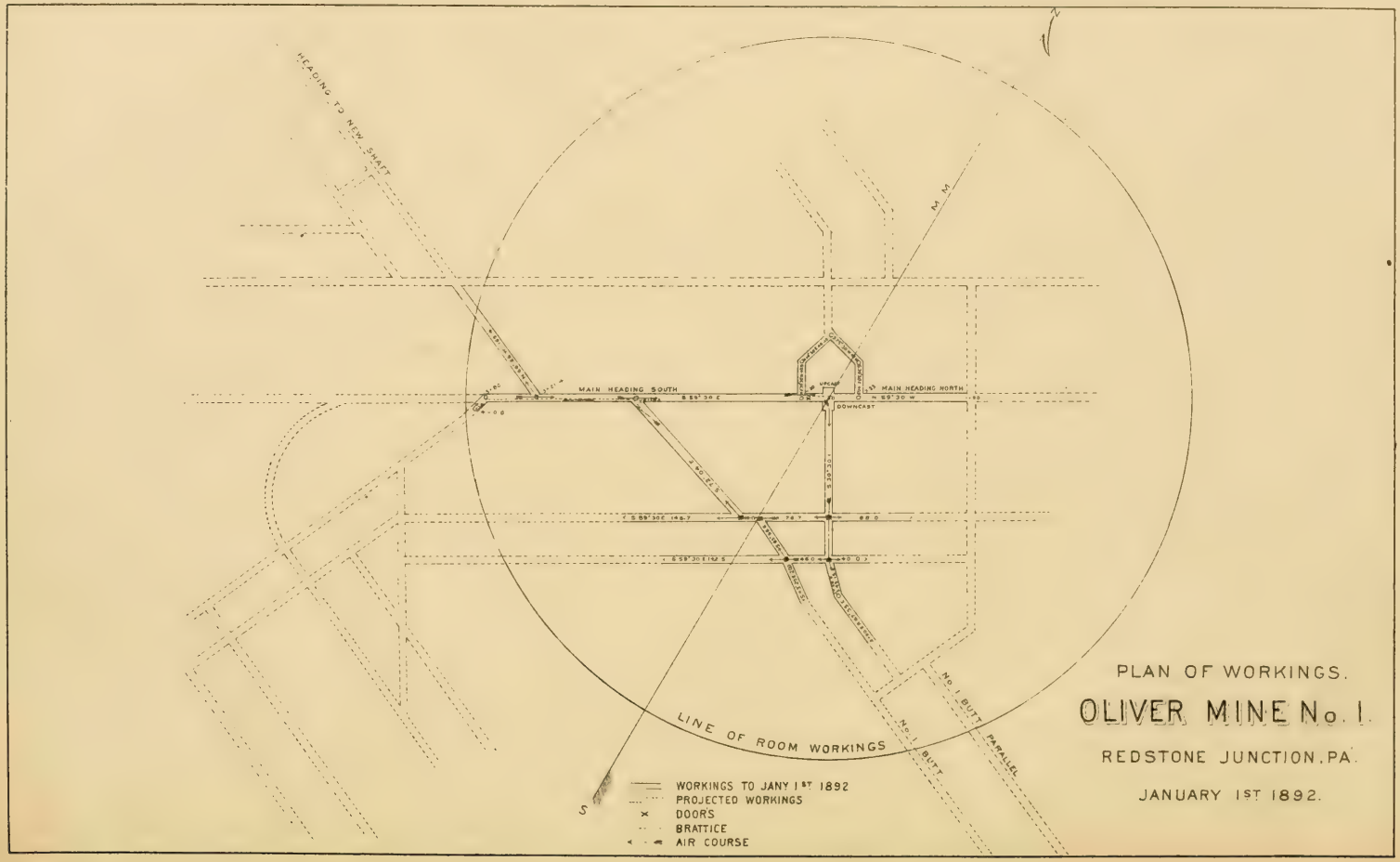
Mahoning Mine.—Owned and operated by the same parties as Morrell and Atlas mines. It is a slope opening and fan ventilation with a volume of 57,600 cubic feet in circulation. The condition of the mine has been very much improved during this year. A new pumping station has been established and the steam pipes removed from the main haulage way, thereby making the mine a great deal cooler and safer in every respect. The general condition of the mine is good, and the law well obeyed. Mining-boss, David Walters.

Oliver Mines Nos. 1 and 2.—Located about one mile north of Uniontown, Fayette county, Pa. Owners, Oliver Coke and Furnace Company, Pittsburg, Pa.

The officials of the Coke Company are D. B. Oliver, president; Geo. T. Oliver, vice president; William Jenkins, secretary; Fred. C. Keighley, superintendent; C. B. Ross, mine-boss; John Schultz, machinist, and Daniel J. Davis and Charles Watson, fire-bosses; Wilkins & Davison, constructing engineers.

Oliver Mine No. 1 is located on the extreme southern edge or line of North Union township. The coal is reached by a shaft 12×26 feet outside measurements and 414 feet in depth The shaft is divided into three compartments, two of which are for hoisting and one for ventilation and exhaust steam, steam lines and water pipe.

The coal in this shaft is being developed or opened up on the four heading system and when fully opened out will be ventilated without the use of doors. In sinking this shaft it was designed to reach the lowest point

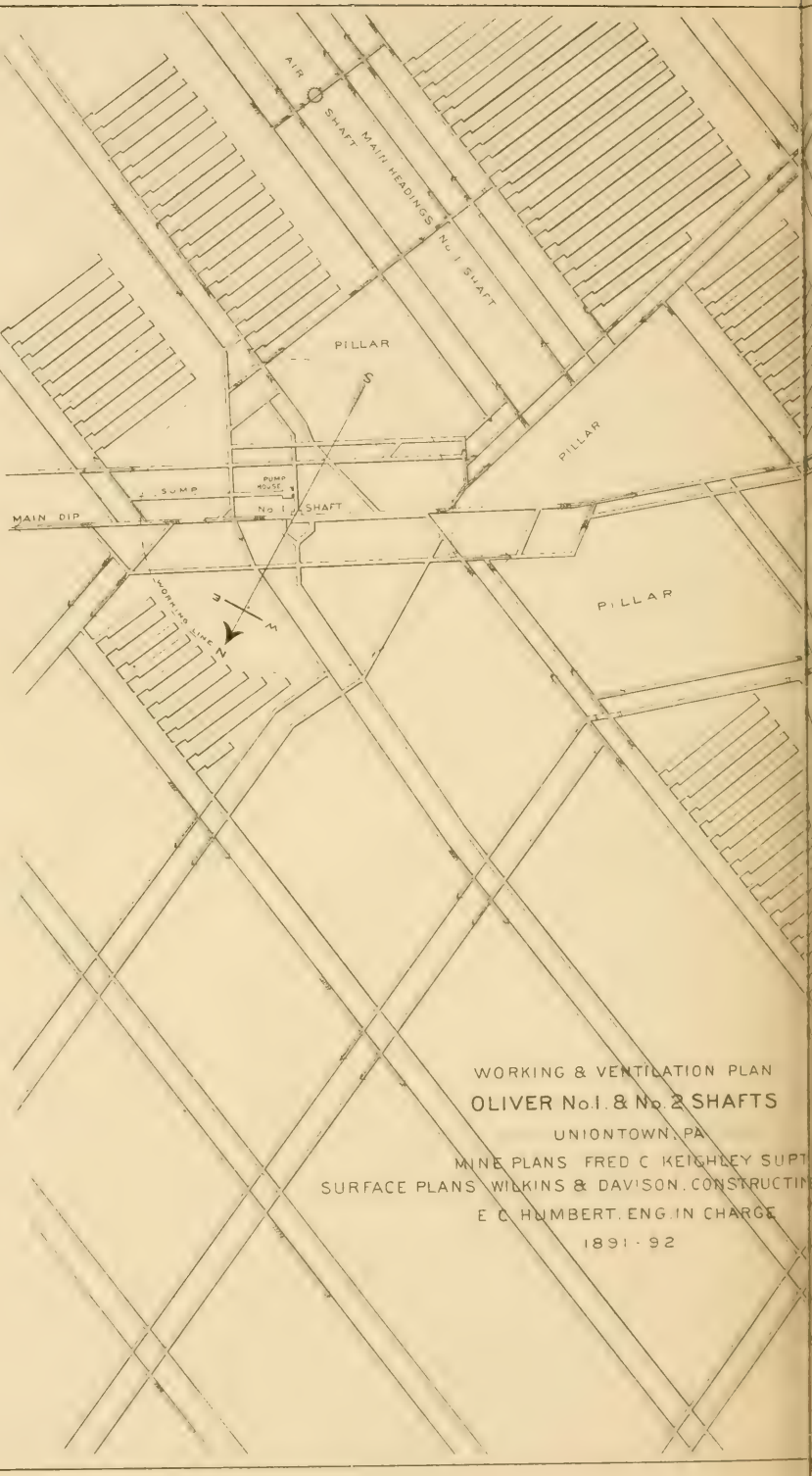


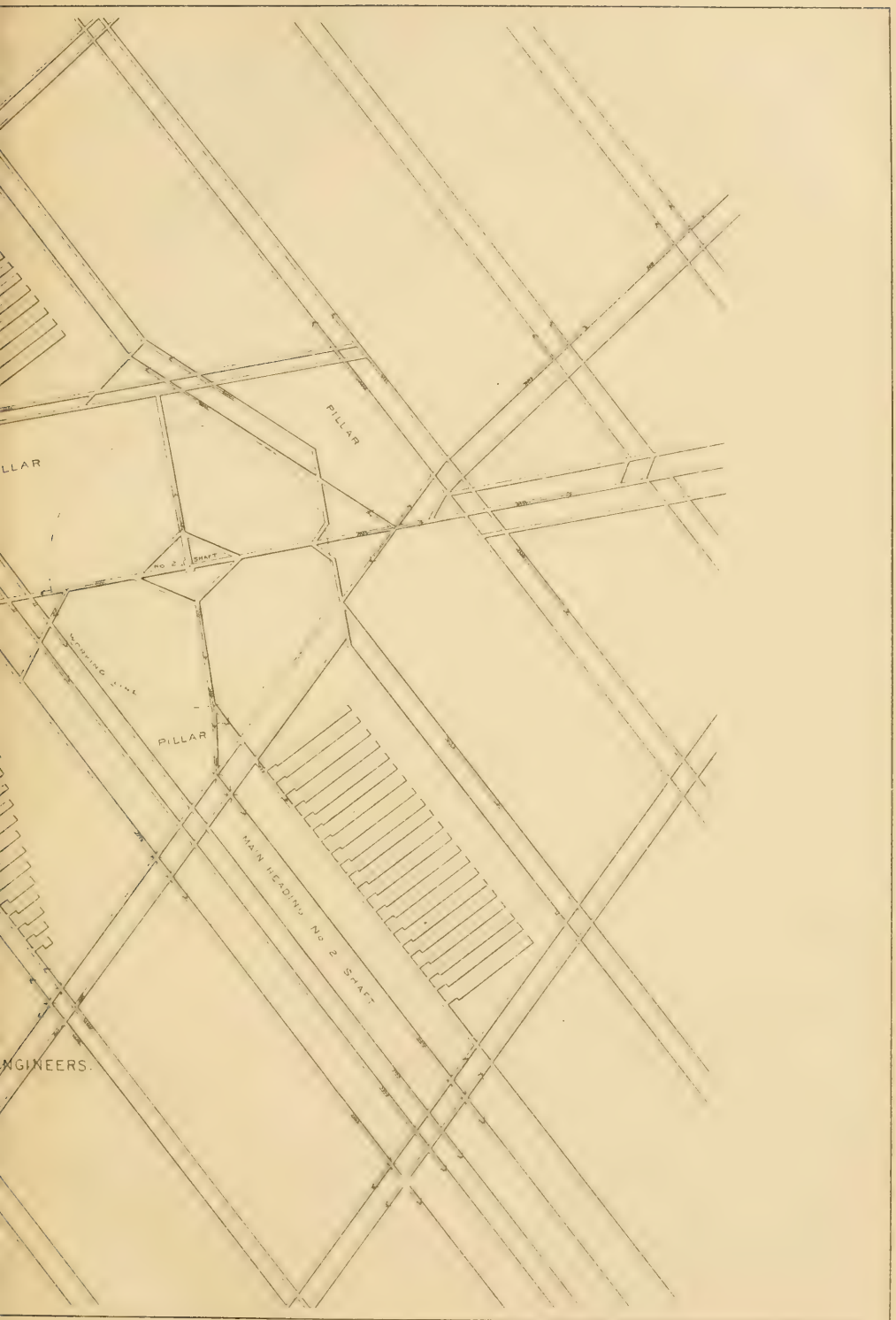
PLAN OF WORKINGS.

OLIVER MINE No. 1.

REDSTONE JUNCTION, PA.

JANUARY 1ST 1892.


AIR SHAFT
MAIN HEADINGS
No. 1 SHAFT
PILLAR
PILLAR
PILLAR
SUMP
PUMP HOUSE
No. 1 SHAFT
MAIN DIP
WORKING SIDE
N
S
WORKING & VENTILATION PLAN
OLIVER No. 1. & No. 2 SHAFTS
UNIONTOWN, PA.
MINE PLANS FRED C KEIGHLEY SUPT
SURFACE PLANS WILKINS & DAVISON, CONSTRUCTIN
E C HUMBERT, ENG IN CHARGE
1891 - 92


PILLAR
No 2 SHAFT
PILLAR
MAIN HEADING No 2 SHAFT

in the basin, but it was found after the shaft was sunk that the coal dipped away to the northeast and it is now probable that the basin is 1,000 feet north east of the present location. The head frame over the shaft is of steel.

The coal bins are of wood and hold about 400 tons of coal. The equipment for hoisting coal and draining the shaft working of water consist of a pair of 28 by 48 inches first motion engines the drums of which are conical running from 10 feet in diameter at small end to 12 feet at large end; four 5 by 16 feet 48.4 inches flue boilers and two duplex Hall pumps of 250 gallons per minute capacity each, together with customary feed pumps, etc. A large Hall compound pump of 500 gallons per minute capacity is now being made for shaft No. 1, and will soon be placed in the mine workings.

Three hundred coke ovens are being built at No. 1 plant and 229 of them are now fully completed. The ovens are charged by means of a locomotive and larrys. All the work done about No. 1 shaft is of the most solid and substantial character and no attempt has been made to sacrifice solidity for the sake of saving expense in construction as is often the case in work of this kind.

Oliver Mine No. 2 is located about 2,000 feet southwest of No. 1 shaft and it is 384 feet deep, nothing has been done at this mine yet beyond the driving of a heading to meet the headings being driven from No. 1 shaft. No. 2 plant will be the largest one and it is expected to make it a 500 oven plant and an effort will be made to equip it with the latest improvements in mining machinery and labor saving devices, and while it is generally conceded that No. 1 plant is one of the finest in the Connellsville coke region it is the earnest endeavor of its owners to have No. 2 plant eclipse it.

The territory tributary to these shafts is quite extensive and the owners of these plants control 1,386 acres of the Connellsville seam of coking coal and have some expectations of increasing the acreage in the near future.

A third shaft will be sunk as soon as the lowest point in the coal field has been located and it will be used as a pumping shaft and for ventilation. The intention is to place two fans at the top of this shaft, one fan to be used continuously and the other to be held in readiness in case of accident.

About six or seven thousand feet of heading has been driven at No. 1 shaft and the coal has been found to be very pure and regular and the thickness averages over 9 feet. The roof and floor are good with the exception of one place and there the roof is crumbling, but it is evidently but a fault of small extent and such as is encountered quite often in the coke region. As might be expected in a mine so near the center of the basin, the workings of No. 1 shaft give off large quantities of fire-damp,

but so far no accident has occurred, owing no doubt to the exclusion of naked lights and the use of locked safety lamps.

Rapid shaft sinking.—Wilkins & Davison of this city, engineers of the Oliver Coke works, inform us that the No. 2 shaft was completed on January 28, the depth being 384 feet 8 inches, being 31 feet less than No. 1 shaft. The work was begun on June 20, 1891, and the sinking occupied 21 weeks and 5 days, being an average rate of 17.7 feet per week. In the first 6 weeks only 30 feet was sunk, most of the time being taken up in getting the plant in shape. During the last sixteen weeks the average speed was 22.5 feet per week, or 3 feet 9 inches for each working day. The shaft is 12 feet by 26 feet out to out of timbers, and the timbering was put in as the work progressed, so that the record given above is for the shaft complete with the timbering in place.

Nellie Drift and Shaft Mine.—Owned and operated by Brown & Cochran. Fan ventilation. September 24, 1891, I measured 29,400 cubic feet of air at the outlet. Average number of persons employed inside, 179. The condition of the mine was very fair as to drainage and ventilation, but the traveling way was in very bad order. The mining-boss, Mr. George Dawson, promised to have it repaired as soon as possible.

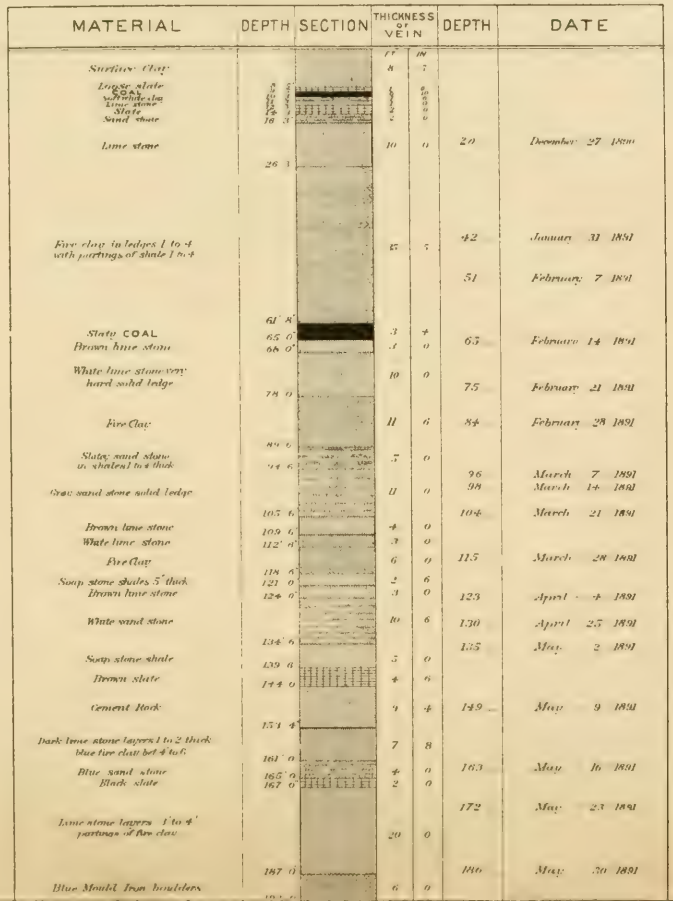
Pennsville Mine.—Located on P. S. W. R. R. Owners, Dillinger & Sherrick. Slope opening, fan ventilation and rope haulage. I have had considerable trouble to get the fan started at this mine before the men entered in the morning, but I understand they are doing better now. I visited the mine three times, and October 7, 1891, I measured 14,500 cubic feet of air in circulation. Haulage roads and drainage good. The mining law well obeyed except in the matter of starting the fan. Mining-boss, Jacob Dewalt.

Percy Mine.—Owners, Percy Mining Company. Slope opening. Ventilated by a 12′ fan which gave, October 16, 1891, a volume of 28,000 cubic feet at outlet and 5,460 cubic feet at or near the face of workings. I have always found this mine in good order and the managers disposed to comply with all the provisons of the law, except in the matter of furnishing the mine Inspector with a tracing of the workings, which is absolutely necessary where the mines are working in such close proximity. Mining-boss, Peter M. Conner.

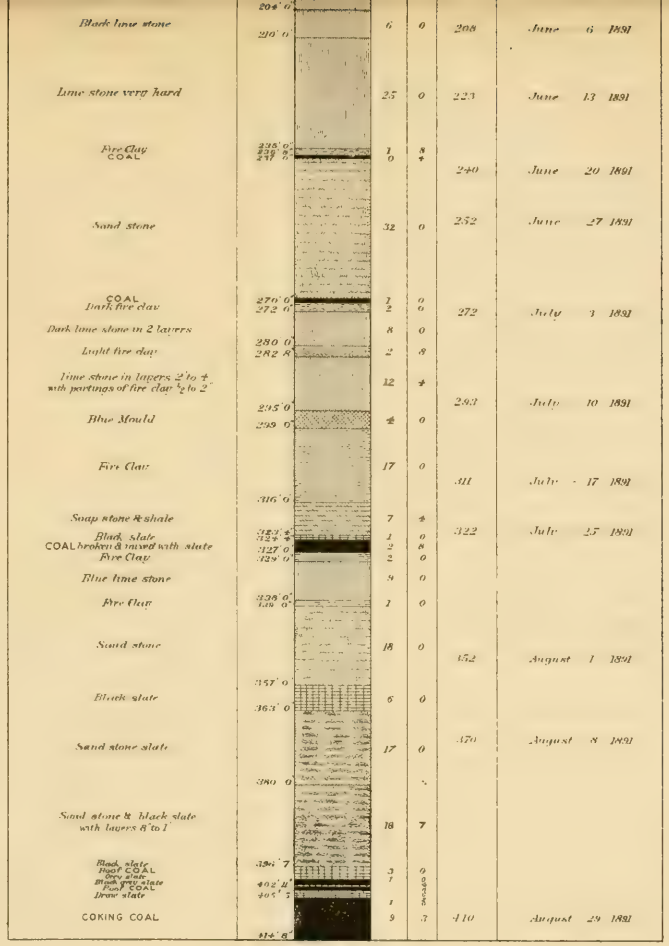
Parish or Ferguson Mine.—Owners, Dunbar Furnace Company. Slope opening and connected with Hill Farm mine. A fan was erected at this mine at the time of the disaster at Hill Farm, but is giving very poor ventilation for lack of care in conducting the air into the working places. November 4, 1891, I measured a volume of 32,830 cubic feet at the fan and only 7,980 feet on the flat where the men are working. The lower workings have been filled with water, but they are dry now and the condition of the mine is gradually improving. Mining-boss, William Bean.

Paul Mine.—Owner, W. J. Rainey. Slope opening, rope haulage and

COLUMNAR SECTION OF SHAFT No. 1. OLIVER COKE WORKS
REDSTONE JUNCTION, PA.



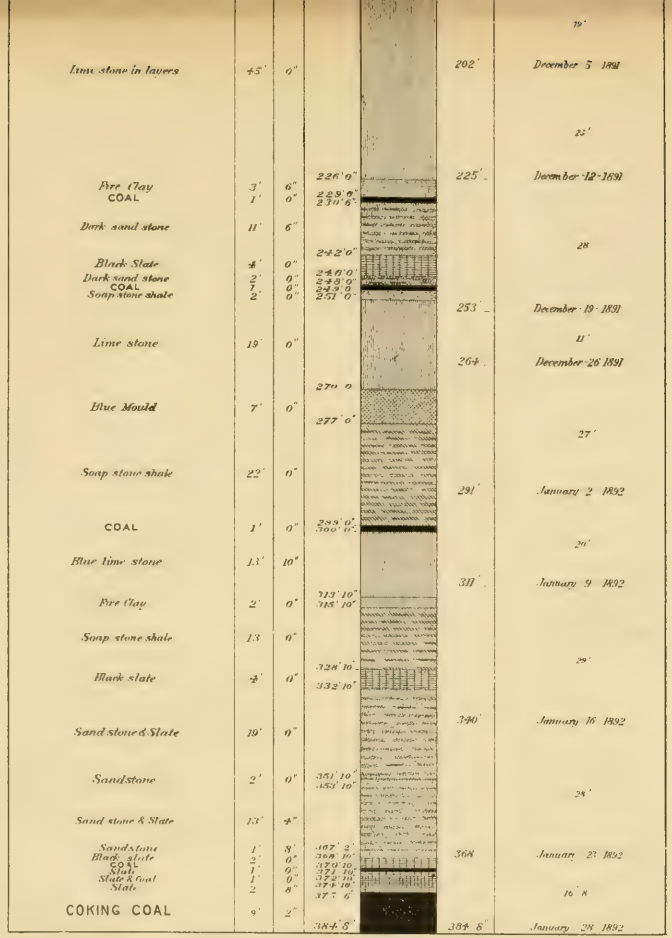
MATERIAL	DEPTH	THICKNESS OF VEIN	DEPTH	DATE
		FT IN		
Surface Clay	8	7		
Loose slate	8 6	1 6		
COAL	9	6		
Soapstone	11	6		
Lime stone	13	2		
Slate	15 3	2 0		
Sand shale	18 3	2 0		
Lime stone		10 0	20	December 27 1890
	26 3			
Fire clay in ledges 1 to 4 with partings of shale 1 to 4		17 7	42	January 31 1891
			51	February 7 1891
	61 8			
Slaty COAL	65 0	3 4		
Brown lime stone	68 0	1 0	63	February 14 1891
White lime stone very hard solid ledge	78 0	10 0	75	February 21 1891
Fire Clay		11 6	84	February 28 1891
	89 6			
Slaty sand stone in shales 1 to 4 thick	94 6	5 0	96	March 7 1891
Gray sand stone solid ledge		11 0	98	March 14 1891
	105 6		104	March 21 1891
Brown lime stone	109 6	4 0		
White lime stone	112 6	3 0		
Fire Clay	118 6	6 0	115	March 28 1891
Soap stone Shales 5' thick	121 0	2 6		
Brown lime stone	124 6	3 0	123	April 4 1891
White sand stone	134 6	10 6	130	April 25 1891
			135	May 2 1891
Soap stone shale	139 6	5 0		
Brown slate	144 0	4 6		
Cement Rock	151 4	7 4	149	May 9 1891
Dark lime stone layers 1 to 2 thick blue fire clay bet 4 to 6	161 0	7 8		
Blue sand stone	165 0	4 0	163	May 16 1891
Black slate	167 0	2 0		
			172	May 23 1891
Lime stone layers 1 to 4' partings of fire clay		20 0		
	187 0		186	May 30 1891
Blue Mould Iron boulders		6 0		



WILKINS & DAVISON,
CIVIL ENGINEERS.

COLUMNAR SECTION OF SHAFT No. 2. OLIVER COKE WORKS
REDSTONE JUNCTION, PA.

MATERIAL	THICKNESS OF VEIN		DEPTH	SECTION	DEPTH	DATE Work begun June 15 1891.
Elevation of Surface 1000.2					1	June 20 1891
Surface Clay	6'	0"	6'0"		6	
					7	June 27 1891
					10	July 3 1891
Loose Sand stone shale	11	0"			11	July 11 1891
					12	August 15 1891
			17'0"		9'	
Solid Sand stone shale	7'	6"			21'	August 22 1891
Sand stone	1	0"	24'6" 25'6"		9'	
Blue slate	6'	6"			30'	October 10 1891
			32'0"			
Dark lime stone	2	0"	34'0"			
Soft Black slate	4	0"	38'6"			
COAL	3'	0"	41'6"			18'
Black lime stone	4	0"	45'6"			
Cement Rock	6	0"	51'6"		48'	October 17 1891
Fire Clay	5'	0"	56'6"			17'
Slatey sand stone	10'	0"	68'6"		65	October 24-1891
Solid ledge sand stone	12	0"				
Black slate	1	0"	78'6" 79'6"			26'
Lime stone	11'	0"				
			90'6"		91	October 31 1891
Soap stone	9'	0"	99'6"			
Lime stone	1'	8"	100'6"			
Fire Clay	0	4"	101'0"			
Sand stone extra hard	8'	0"				27'
			109'0"			
Soap stone	11'	0"				
			120 0		118	November 7 1891
Brown lime stone	2'	0"	122 0'			
Light lime stone	10'	0"				16'
			132 0"			
Black lime stone	2'	0"	134 0"		134	November 14 1891
Sand stone	8'	0'				
Sand stone shale	2	0'	142'0'			
Black slate	1'	0	143 0"			21'
Lime stone	19	0"			157'	November 21 1891
			164 0"			
Blue Mould	7'	0"				26
			171'0			
Soap stone shale	10	0'				
			181'0			



				19'	
Lime stone in layers	45'	0"		202'	December 5 1891
				22'	
			226' 6"	225'	December 12 1891
Fire Clay	3'	6"	229' 0"		
COAL	1'	6"	230' 6"		
Dark sand stone	11'	6"	242' 6"	28'	
Black Slate	4'	0"	246' 0"		
Dark sand stone	2'	0"	248' 0"		
COAL	1'	0"	249' 0"		
Soap stone shale	2'	0"	251' 0"		
				253'	December 19 1891
Lime stone	19'	0"		11'	
				264'	December 26 1891
			270' 0"		
Blue Mould	7'	0"	277' 0"	27'	
Soap stone shale	22'	0"		291'	January 2 1892
COAL	1'	0"	293' 0"		
			300' 0"	20'	
Blue lime stone	13'	10"			
				311'	January 9 1892
			313' 10"		
Fire Clay	2'	0"	315' 10"		
Soap stone shale	13'	0"		29'	
			328' 10"		
Black slate	4'	0"	332' 10"		
				340'	January 16 1892
Sand stone & Slate	19'	0"			
Sand stone	2'	0"	351' 10"	24'	
			353' 10"		
Sand stone & Slate	13'	4"			
Sand stone	1'	8"	367' 2"		
Black slate	2'	0"	369' 10"	368'	January 23 1892
COAL	1'	0"	370' 10"		
Slate	1'	0"	371' 10"		
Slate & Coal	1	0"	372' 10"		
Slate	2	8"	374' 10"	16' 8"	
			377' 6"		
COKING COAL	9'	2"	384' 8"	384' 8"	January 28 1892

WILKINS & DAVISON,
CIVIL ENGINEERS.
WESTINGHOUSE BUILDING,
PITTSBURGH. PA

is worked on the double-entry system. Fan ventilation which has not been very satisfactory on account of the air not being carried forward. November 5, 1891, I measured a volume of 24,000 cubic feet at the fan and only 7,600 cubic feet in the dip, showing great loss by leakage. A new haulage way is being opened into this mine which I hope will very much improve the ventilation. Owing to the unsatisfactory condition of the mine, I have visited it five times during the year and I think there is now a fair prospect that it will be put in good order. One hundred new ovens have been added to this plant making 314 in all. Mining-boss, David Young.

Stewart Mine No. 1.—Located on the B. & O. R. R., near Evans station. Slope opening, rope haulage and double-entry system. Ventilated by a Guibal fan 20′ in diameter which produced, July 14, 1891, a volume of 74,580 cubic feet with a water gauge of four-tenths of an inch, thus showing that the airways were large and in good order. The split air current system is used and on first flat I measured 17,920 cubic feet. All the provisions of the mining law are strictly enforced and I consider this mine one of the best in the region. Mining-boss, I. G. Roby.

Scottdale Iron and Steel Company.—Located at Scottdale, Pa. Drift opening and for the first half of the year there was natural ventilation, but in August the air became so bad that they consented to put in a 12′ fan and I am sure that neither the operators nor employes have regretted it. November 10, 1891, I measured 31,860 cubic feet of air in circulation which was well distributed to the workmen. The mine is now in good condition. Mining-boss, Henry Suttle.

Spring Grove Mine.—Located on the Dickenson Run branch of the Pittsburg, McKeesport and Youghiogheny railroad near Vanderbilt. Owners, Brown & Cochran. Drift opening and natural ventilation. This is a new mine opened during the year. Preparations are being made to build a furnace soon. Condition of the mine fair. Mining-boss, Frank Pickard.

Stewart Mine No. 2.—Owned and operated by the Stewart Iron Company. Drift opening into the Sewickley vein which is about 4½ feet thick and 152 feet above the Connellsville vein. The coal is a little harder than the big vein and is of a very fair quality. This mine has two openings, with considerable difference of elevation and is ventilated by natural forces. General condition and drainage good. Mining-boss, Charles Roberts.

Statler and Standard.—Drift openings and natural ventilation which is not very good. November 25, 1891, I measured a volume of 9,120 cubic feet. This is not enough, as there is a great deal of powder used, consequently it requires more air. The drainage and haulage roads were in fair condition. Mining-boss, Orlando Flesher.

Snider Mine.—Located on the National pike two miles west of Uniontown. Drift opening and natural ventilation. The production of this

mine is used in local trade. Average number of persons employed in the winter season, about eighteen. Condition of mine fair. Mining-boss, Robert Wilson.

Thomas Mine.—Located near Meyersdale, Pa. Drift opening and single entries. November 27, 1891, I measured a volume of 8,880 cubic feet, but it was not well carried forward to the workings. I requested that this should be done immediately. Drainage rather poor but they are driving a heading with a view of securing better. Mining-boss, Benjamin Thomas.

Tub Mill Run Mine.—Operated by the Fair View Coal Company. Drift opening and natural ventilation which is the general system in Somerset county and a very poor system it is, where there is as much powder used as there is in this county, nearly all the coal being blasted out of the solid without any undercutting. On my last visit, November 23, 1891, I measured 9,360 cubic feet of air in circulation which is not enough in an eight-foot seam of coal. Mining-boss, Thomas Rees.

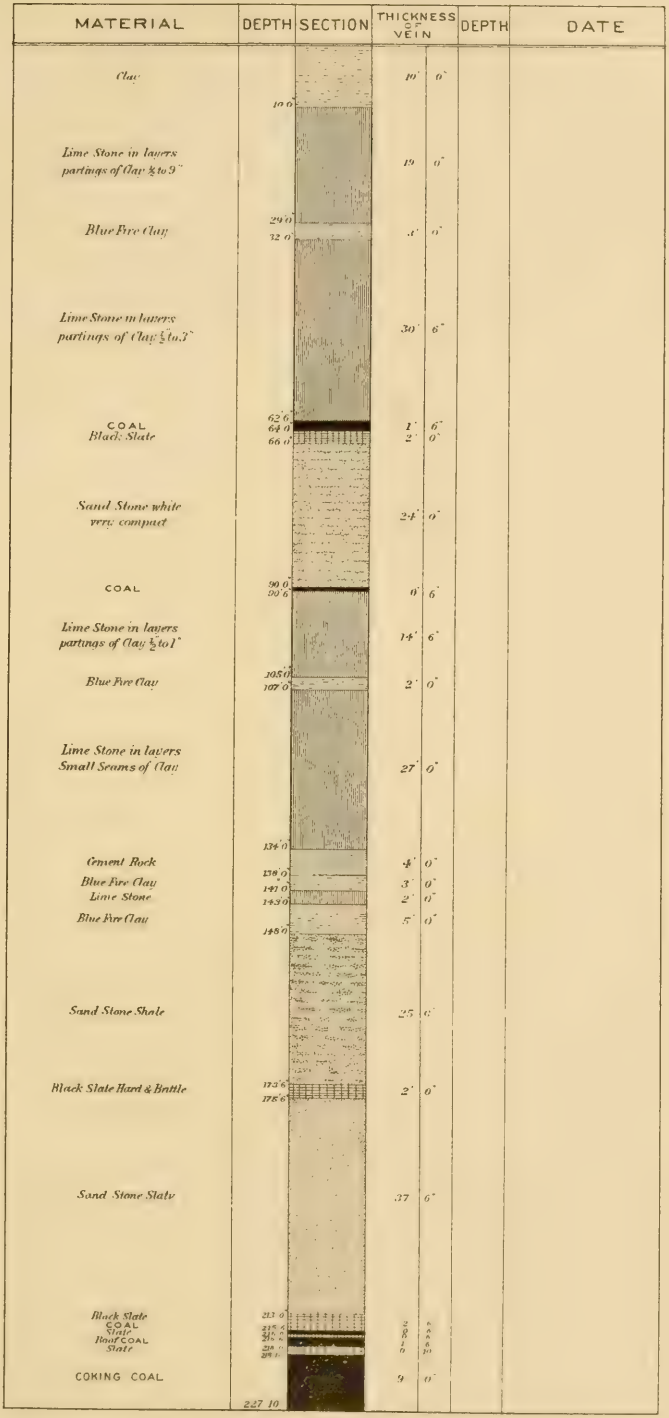
Tyrone Mine.—Located on the Baltimore and Ohio railroad near Broadford. Owners, Laughlin Company, Limited. Drift opening, double entries and rope haulage. The ventilation is produced by the furnace under the steam boiler which is in the mine. My last measurement showed a volume of 18,900 cubic feet at inlet, and 8,880 on the parallel butt where the men were working. The mine was in good condition and the provisions of the mining law well carried out. Mining-boss, Thomas R. Kane.

Union or Smock Mine.—Located at Smock station, on the Redstone branch of the Pittsburg, Virginia and Charlestown railroad. Drift opening and furnace ventilation. This mine is very favorably located both for drainage and ventilation, the coal all lying to the rise of the main opening. I have always found it in good condition and the provisions of the law well carried out. Mining-boss, Allen Champ.

Uniondale Mine.—Located near Dunbar. Owned by J. M. Reid & Co. Slope opening, rope haulage and fan ventilation. November 4, 1891, I measured a volume of 54,000 cubic feet at the intake, and 29,400 cubic feet in the workings. This was formerly considered a very dangerous mine but the pillars having been withdrawn in the lower workings has allowed the overlying strata to break to the surface, thereby leaving the lighter gases escape. Drainage and ventilation fair. Mining-boss, James L. Allen.

Ursina or Edna Mine.—Located on a branch railroad owned by the Connellsville and Ursina Coal and Coke Company. Drift opening, natural ventilation and single-entry system. This mine was idle the greater portion of the year consequently I had no opportunity of visiting it

COLUMNAR SECTION JUNIATA SHAFT



when in operation. They employ fewer than ten men, therefore do not come under the mining law, but I understand a certified mine-boss is in charge.

Wheeler Mine.—Owned by the Cambria Iron Company, but operated by Isaac Taylor, lessee. Slope opening and double entries. Ventilated by a Murphy fan 6′ in diameter. My last measurement, November 28, 1891, showed a volume of 15,360 cubic feet. Condition of the mine fair. Mining-boss, John Walter.

TABLE I—*Showing Location of Collieries in the Fifth Bituminous Mine District.*

NAME OF COLLIERY.	Name of Operator.	Location—County.	Name of Superintendent.	Postoffice address.
Adelaide	H. C. Frick Coke Company	Fayette	R. O. Thomas	Broadford.
Atlas	Cambria Iron Company	do.	John Dilworth	Dunbar.
Anchor		do.	James Henderson	do.
Berlin	B. D. Morgan & Co.	Somerset	C. J. Baker	Berlin.
Buffalo	Buffalo Coal and Coke Company	do.	W. F. Childs	Garrett.
B. & O.	W. P. Stillwagon	Fayette	W. P. Stillwagon	Connellsville.
Banning	Morgan, Moore and Bane Company	do.		
C. & E. L. Grassy Run	Cumberland and Elk Lick Coal Company	Somerset	A. Chamberlin	Meyersdale.
Clinton	H. C. Frick Coke Company	Fayette	James Lynch	Scottdale.
Coal Brook	McClure Coke Company	do.	F. Pickard	Moyers.
Clarissa	James Cochran Sons & Co.	do.	P. G. Cochran	Vanderbilt.
Cora	J. Newmyer & Sons	do.	J. S. Newmyer	Dawson.
Casselman	Casselman Coal Company	Somerset	W. G. Hocking	Meyersdale.
C. and E. L. Coal Company	Cumberland and Elk Lick Coal Company	do.	A. Chamberlin	do.
Cal. T. Hay	Cal. T. Hay	do.	Cal. T. Hay	Salisbury.
Cumberland No. 1	Cumberland and Summit Coal Company	do.	Frederick Rowe	Meyersdale.
Cumberland No. 2	do. do. do.	do.	do.	do.
Chester	E. A. Humphries & Co.	Fayette	R. J. Humphries	West Leisenring.
Davidson shaft	H. C. Frick Coke Company	do.	J. I. Munson	Connellsville.
Diamond	McClure Coke Company	do.	J. P. Brennan	Scottdale.
Dexter	J. R. Stauffer	do.	S. R. Fairchild	do.
Edna	Connellsville and Ursina Coal and Coke Company	Somerset	E. H. Reid	Ursina.
Elm Grove	W. T. Rainey	Fayette	C. Echard	Vanderbilt.
Fountain	E. A. Humphries	do.	E. A. Humphreys	Scottdale.
Franklin	B. F. Keister & Co.	do.	B. F. Keister	Owensdale.
Fort Hill	W. J. Rainey	do.	T. J. Mitchell	Connellsville.
Fairchance	Fairchance Furnace Company	do.	R. L. Martin	Fairchance.
Ferguson	Dunbar Furnace Company	do.	Frank A. Hill	Dunbar.
Fair View	Fair View Coal Company	Somerset	Thomas Rees	Meyersdale.
Flog Hill	do. do.	do.	do.	do.
Grace	W. J. Rainey Coke Company	Fayette	Thomas W. Johns	Moyers.
Grindstone shaft	Redstone Oil, Coal and Coke Company	do.	James F. Cook	Grindstone.
Great Bluff	E. A. Humphries	do.	E. A. Humphries	Scottdale.
Grassy Run	Grassy Run Coal Company	Somerset	John Meager	Elk Lick.
Henry Clay	H. C. Frick Coke Company	Fayette	W. C. Mullan	Broadford.
Hill Farm	Dunbar Furnace Company	do.	Frank A. Hill	Dunbar.
Home	Stauffer & Wiley	do.	J. W. Wiley	Scottdale.
Hamilton	Hamilton & Cochran	Somerset	James Cochran	Elk Lick.
Hocking	Hocking Coal Company	do.	John Hocking, Jr.	Meyersdale.
Junction	Joseph Laughrey & Co.	Fayette	P. G. Cochran	Vanderbilt.
Juniata	Juniata Coke Company	do.	do.	Dawson.
Jackson	James Cochran & Sons	do.	G. G. Cochran	do.
Kyle	H. C. Frick Coke Company	do.	J. H. McDonald	Fairchance.
Keystone	Keystone Coal Company	Somerset	E. J. Weld	Meyersdale.
Leith	H. C. Frick Coke Company	Fayette	Harry Whyel	Uniontown.
Laughead	Martin Coke Company	do.	L. S. McDowell	Oliphant.
Lemont No. 1	McClure Coke Company	do.	M. H. Kerr	Lemont Furnace.

Lemont No. 2	McClure Coke Company	Fayette	M. H. Kerr	Lemont Furnace.
Leisenring No. 1	H. C. Frick Coke Company	do.	J. A. Esser	Leisenring.
Leisenring No. 2	do. do.	do.	R. A. Slater	West Leisenring.
Leisenring No. 3	do. do.	do.	Austin King	Leisenring.
Lynn	Hanna Brothers	do.	John Statham	Roscoe, Washington county.
Morrell	Isaac Taylor (lessee)	do.	A. L. Nelson	Connellsville.
Mahoning	do.	do.	John Dilworth	Dunbar.
Mount Braddock	Robert Hogsett & Co.	do.	Fuller Hogsett	Mount Braddock.
Morgan	H. C. Frick Coke Company	do.	W. C. Mullan	Broadford.
Nellie	Brown & Cochran	do.	P. G. Cochran	Dawson.
Oliphant	H. C. Frick Coke Company	do.	Charles Jones	Oliphant Furnace.
Painter	McClure Coke Company	do.	P. J. Brennan	Scottdale.
Pennsville	Dillinger & Sherrick	do.	J. T. Dillinger	Pennsville.
Percy	Percy Mining Company	do.	Louis de Saulles	Uniontown.
Paul	W. J. Rainey Coke Company	do.	J. T. Mitchell	Connellsville.
Plumer	H. C. Frick Coke Company	do.	John I. Munson	do.
Pine Hill	Pine Hill and Cumberland Coal Company	Somerset	Herman Flote	Berlin.
Redstone	Redstone Coke Company (Limited)	Fayette	S. E. Wadsworth	Brownfield.
Rist	H. C. Frick Coke Company	do.	W. C. Mullan	Broadford.
Rainbow	Rainbow Coal and Coke Company	do.	D. P. Whitsett	Whitsett.
Scottdale Iron and Steel Co.	Scottdale Iron and Steel Company	do.	A. S. Livengood	Everson.
Sterling No. 1	H. C. Frick Coke Company	do.	Milson Rosser	Dawson.
Sterling No. 2	do. do.	do.	do.	do.
Summit and Eagle	do. do.	do.	C. J. Warnock	Owensdale.
Stewart	Stewart Iron Company	do.	F. C. Van Dusen	Uniontown.
Stewart hard coal	do. do.	do.	do.	do.
Statler and Standard	Statler and Standard Coal Company	Somerset	E. Statler	Elk Lick.
Snider	Edward Snider	Fayette	Edward Snider	Uniontown.
Smocks	J. D. Boyd & Co.	do.	J. D. Boyd	do.
Spring Grove	Brown & Cochran	do.	J. R. Laughrey	Dawson.
Tip Top	H. C. Frick Coke Company	do.	James Lynch	Scottdale.
Tyrone	Laughlin & Co. (Limited)	do.	Clifton Wharton	Broadford.
Tub Mill Run	Fair View Coal Company	Somerset	Thomas Rees	Meyersdale.
Thomas	Benjamin Thomas	do.	Benjamin Thomas	do.
Trotter	H. C. Frick Coke Company	Fayette	John Snedden	Connellsville.
Uniondale	Reid Brothers	do.	J. M. Reid	Dunbar.
Valley	H. C. Frick Coke Company	do.	James Lynch	Scottdale.
White	do. do.	do.	W. C. Mullan	Broadford.
Wynn	do. do.	do.	J. S. Atkinson	Oliphant Furnace.
Wheeler	Isaac Taylor (lessee)	do.	A. L. Nelson	Connellsville.
Youngstown	Youngstown Coke Company (Limited)	do.	George Cowie	Lemont Furnace.

*Opening abandoned. Coal goes to Valley mine.

TABLE II—*Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Fifth Bituminous Mining District for the year ending December 31, 1891.*

NAMES OF COLLIERIES.	Location.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs of powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Adelaide	Fayette county	160,000	104,000		198	329		3		6	15	1	342
Atlas	do.	53,137	31,898		211	85				4	6		80
Anchor	do.	50,000	30,200		240	96	1			5	4		100
Berlin	Somerset county	4,966		4,966	240	14			36		2		
Buffalo	do.	6,817		6,817	89	41			60	1	3		
B. & O.	Fayette county	40,646		40,646	365	23				1	3		
Banning	do.	100,461		100,461	218	97		2		1	8		
C. & E. L. Grassy Run	Somerset county	27,585		27,585	243	27					2		
Clinton	Fayette county												
Coal Brook	do.	36,057	24,000		261	56			25	1	4		50
Clarissa	do.	66,000	46,000	2,000	255	84					8		108
Cora	do.	24,243	17,328	250	261	34	1			1	3		42
Casselman	Somerset county	68,000		68,000	290	68		3	600	1	4		
C. & E. L. Coal Company	do.	97,829	22,857	63,544	243	103					8		75
Cal. T. Hay	do.												
Cumberland No. 1	do.	14,368	595	13,773	210	31			225		1		10
Cumberland No. 2	do.	29,640	893	28,445	225	49			450		3		
Chester	Fayette county	17,297	11,467		213	37				1	3		33
Davidson shaft	do.	162,911	109,000		188	295	1	5		9	20	2	330
Diamond	do.	3,700	2,400		32	45					5		66
Dexter	do.	14,336	14,088		182	24			12	1	3		40
Edna	Somerset county	5,208	2,312	555	174	12					1		30
Elm Grove	Fayette county												80
Fountain	do.	6,900	4,032		45	65				2	6		87
Franklin	do.	25,240	18,850		218	37			150	1	3		50
Fort Hill	do.	190,960	127,306		300	294		3		3	20		286
Fairchance	do.	92,627	58,621		294	159				1	9		152
Ferguson	do.	64,510	37,066		384	103		1		5	6		70
Fair View	Somerset county	33,400		33,400	264	46			500		4		

Flog Hill.	Somerset county.	45,600		45,600	262	58			577		5		
Grace.	Fayette county.	309,750	230,000		295	303	3	1		8	18		408
Grindstone shaft.	do.	27,169	10,129	27,169	200	127		3	300	3	7		30
Great Bluff.	do.	8,934	7,333		225	18				1	2		16
Grassy Run.	Somerset county.	16,657		16,657	197	26	1		200		2		
Henry Clay.	Fayette county.	70,600	40,028	Uncertain.	198	118	1			6	12		120
Hill Farm.	do.												
Home.	do.												
Hamilton.	Somerset county.												
Hocking.	do.	46,000		46,000	263	53			450		4		
Junction.	Fayette county.												
Juniata.	do.	66,149	46,000		256	165	1	1		3	5		250
Jackson.	do.	33,235	21,600		257	47				1	4		65
Kyle.	do.	62,510	40,580		196	150				2	12		164
Keystone.	Somerset county.												
Leith.	Fayette county.	150,069	101,064		209	325	3			8	32	1	284
Langhead.	do.	19,395	12,697		156	59		1	6	1	3		50
Lemont No. 1.	do.	99,000	66,064		207	205	1			5	14		214
Lemont No. 2	do.	110,000	74,205		208	341	1	2		4	23		300
Leisenring No. 1.	do.	206,090	136,392		193	458	1	1		13	26	1	500
Leisenring No. 2.	do.	120,056	78,000		120	458	1	1		10	27	2	500
Leisenring No. 3.	do.	204,118	136,000		177	459	2	5		9	26	2	503
Lynn.	do.	9,625		9,625	301	24			110		3		
Morrell.	do.	233,664	156,764		216	381		2	600	10	27		400
Mahoning.	do.	44,417	25,471		218	84	1			5	6		100
Mt. Braddock.	do.	88,800	57,000		275	134				8	12		170
Morgan.	do.	2,622	67,376		29	123					2	1	367
Nellie.	do.	156,250	90,000	30,000	250	281		1		2	18		329
Oliphant.	do.	58,326	37,940		185	136	1			4	10		130
Painter.	do.	95,666	63,776		226	220	1		400	1	11	1	228
Pennsville.	do.	63,116	47,169	995	288	80		2		3	4	1	92
Percy.	do.	45,351	25,254	4,094	282	65			4	3	2		62
Paul.	do.	172,467	114,978		300	331	1			3	24	1	314
Plumer.†	do.												
Pine Hill.	Somerset county.												
Redstone.	Fayette county.	151,283	99,158		192	339	1	1		10	25	2	445
Rist.	do.	94,871	‡		187	118				4	13	1	‡
Rainbow.	do.	75,000		75,000	275	68	1	1	300	1	5		
Scottdale Iron and Steel Company.	do.	25,085		§	260	27				1	2		
Sterling No. 1.	do.	50,386	32,470		226	90				2	3		100
Sterling No. 2.	do.	124,500	82,000		236	195				3	10	1	294
Summit and Eagle.	do.	75,117	51,070		223	156		2		1	11		222
Stewart.	do.	69,898	49,136		210	130				5	6		120
Stewart Hard Coal.	do.	3,343		3,343									
Statler & Standard.	Somerset county.												
Snider.	Fayette county.	827		827	233	17					2		
Smocks.	do.	37,751		37,751	202	77	1		300		5		
Spring Grove.	do.	48,000		48,000	120	61					4		
Tip Top.¶	do.												
Tyrone.	do.	81,000	56,512		251	97			300	2	6		144
Tub Mill Run.	Somerset county.	45,000		45,000	235	48			502		3		
Thomas.	do.												
Trotter.	Fayette county.	197,768	132,078		189	433		6		8	21		464
Uniondale.	do.	29,628	27,803		207	65				2	3		74

* In with Valley. † In with Davidson. ‡ In with Morgan. § Consumed by rolling-mill. ¶ Idle all year.

TABLE II—*Continued.*

NAMES OF COLLIERIES.	Location.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Valley	Fayette county	143,337	92,199	*	197	242	. . .	2	. . . .	5	14	1	251
White	do.	64,580	40,126	. . . . .	157	154	. . .	. . .	. . . .	1	9	. . .	200
Wynn	do.	2,914	1,537	. . . . .	19	74	. . .	. . .	. . . .	3	4	. . .	70
Wheeler	do.	63,214	41,550	. . . . .	218	90	. . .	. . .	. . . .	4	6	. . .	100
Youngstown	do.	75,000	61,059	. . . . .	192	210	1	1	. . . .	6	13	1	240
Oliver No. 1	do.	2,825	2,300	. . . . .	18	100	. .	3	. . . .	4	5	1	229
Total		5,463,801	3,117,831	780,504	16,109	10,284	26	53	6,107	219	655	20	10,190

* Furnished to Pennsylvania railroad; quantity not known.

TABLE III—*Showing the number of each class of Employes at each Colliery in the Fifth Bituminous Mine District during the year 1891.*

Name of Collieries.	Location—County.	Number of Persons Employed Inside.							Number of Persons Employed Outside.							Grand totals inside and outside.
		Inside foreman or mine-boss.	Miners.	Miners' boys.	All company men.	Drivers and runners.	Doorboys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Cokers and yardmen.	All company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Adelaide,	Fayette,	1	160	....	13	15	8	196	1	6	6	98	20	2	133	329
Atlas,	do.	1	38	4	4	4	1	52	1	2	3	24	2	1	33	85
Anchor,	do.	1	40	....	8	4	....	52	....	1	3	35	4	1	44	96
Berlin,	Somerset,	1	8	....	2	2	....	13	....	....	....	....	....	1	1	14
Buffalo,	do.	1	32	1	1	3	1	39	....	....	1	....	1	....	2	41
Baltimore and Ohio,	Fayette,	1	18	....	1	2	....	22	....	1	....	2	....	2	8	33
Banning,	do.	1	75	....	1	8	1	86	....	....	....	....	6	2	11	97
C. & E. L. Grassy Run,	Somerset,	1	19	3	1	2	....	26	....	....	....	....	1	....	1	27
Clinton,*	Fayette,	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Coal Brook,	do.	1	25	....	1	4	....	31	....	1	....	....	19	1	25	56
Clarissa,	do.	1	45	....	2	6	....	54	....	1	....	....	22	2	30	84
Cora,	do.	1	11	3	2	2	....	19	....	1	....	....	12	2	15	34
Casselman,	Somerset,	1	46	8	4	4	1	64	....	1	2	....	....	1	4	68
C. & E. L. Coal Company,	do.	1	66	6	4	8	3	87	....	1	....	....	8	2	16	103
Cal. T. Hay,	do.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cumberland No. 1,	do.	1	20	2	....	1	....	24	....	....	....	....	4	2	7	31
Cumberland No. 2,	do.	1	30	3	4	3	....	41	....	....	....	....	4	2	8	49
Chester,	Fayette,	1	20	....	2	2	....	25	....	....	1	....	8	2	12	37
Davidson shaft,	do.	1	130	11	14	18	6	180	1	9	8	75	20	2	115	295
Diamond,	do.	1	19	....	1	2	1	24	1	....	....	20	....	....	21	45
Dexter,	do.	1	10	....	1	3	....	15	....	....	....	8	....	1	9	24
Edna,	Somerset,	....	5	....	1	1	....	7	....	....	....	4	....	1	5	12
Elm Grove	Fayette,	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fountain,	do.	1	26	....	5	6	....	38	....	2	1	16	6	2	27	65
Franklin,	do.	1	15	....	....	3	....	19	....	....	1	15	1	1	18	37
Fort Hill,	do.	1	120	....	1	18	....	140	1	5	5	130	9	4	154	294
Fairchance,	do	1	51	....	9	8	....	69	1	2	2	68	14	3	90	159
Ferguson,	do.	1	43	6	5	4	2	61	....	2	4	30	4	2	42	103
Fair View,	Somerset,	1	30	4	....	3	....	38	1	2	....	....	1	4	8	46

* In with Valley.

TABLE III—*Continued.*

NAMES OF COLLIERIES.	Location—County.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand totals inside and outside.
		Inside foreman or mine-boss.	Miners.	Miners' boys.	All company men.	Drivers and runners.	Doorboys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Cokers and yardmen.	All company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Flog Hill	Somerset		36	8	1	5		50		3			3	2	8	58
Grace	Fayette	1	150	4	4	18	4	181	1	6	6	100	7	2	122	303
Grindstone shaft	do	1	60		24	6		91		1	5	14	8	2	36	127
Great Bluff	do	1	8			2		11			1	4	1	1	7	18
Grassy Run	Somerset	1	19	3	1	2		24					2		2	26
Henry Clay	Fayette	1	44	3	6	10		64	1	1	2	45	3	2	54	118
Hill Farm	do															
Home	do															
Hamilton	Somerset															
Hocking	do	1	42	3		4	1	51					1	1	2	53
Junction	Fayette	1	30	5	3	3		42		1			1	1	3	45
Juniata	do	1	100	4	4	5	1	115	1	3	3	35	6	2	50	165
Jackson	do	1	18	2	2	4		27		2	1	12	3	2	20	47
Kyle	do	1	62		7	10	1	81	1	2	3	51	11	1	69	150
Keystone	Somerset	1	9	1	3	3		17		1	1		2	1	5	22
Leith	Fayette	1	125		32	30	6	194	1	6	7	90	25	2	131	325
Langhead	do	1	23	2	1	3		30		1	1	24	1	2	29	59
Lemont No. 1	do	1	90	2	10	14	6	123	1	5	3	55	15	3	82	205
Lemont No. 2	do	1	170	2	15	23	4	215	1	8	5	90	19	4	126	341
Leisenring No. 1	do	1	212		44	24	12	293	1	7	7	139	8	3	165	458
Leisenring No. 2	do	1	225		22	25	12	285	1	10	10	124	24	4	173	458
Leisenring No. 3	do	1	252	1	31	24		309	1	6	6	120	14	3	150	459
Lynn	do	1	18			3		22					1	1	2	24
Morrell	do	1	160	15	23	23	3	225	1	4	7	130	12	2	156	381
Mahoning	do	1	37	2	5	4		49		2	5	26	1	1	35	84
Mt. Braddock	do	1	50		5	8	4	68	1	2	3	50	6	4	66	134
Morgan	do	1	12		1	2		16	1	1	1	100	3	1	107	123
Nellie	do	1	150		9	15	4	179	1	3	4	82	9	3	102	281
Oliphant	do	1	70		8	8	2	89	1	2	4	35	4	1	47	136
Painter	do	1	86	2	5	11	1	106	1	3	2	95	10	3	114	220
Pennsville	do	1	34	1	3	3		42	1	1	3	25	5	3	38	80
percy	do	1	28		3	2	3	37	1	1	3	20	2	1	28	65
Paul	do	1	130		1	24	7	163	1	5	6	140	12	4	168	331

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TABLE IV.—*List of Fatal Accidents occurring in and about the mines of the Fifth Bituminous Mine District for the year ending December 31, 1891.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	Number of orphans.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
Jan. 2.	John Murphy.	Driver.	38	S.	...	Lemont No. 2.	Fayette.	Crushed between wagons and rib.
5.	John Heninger.	Miner.	45	M.	...	Tyrone.	do.	Died from an attack of epilepsy.
15.	Harry James.	do.	47	M.	7	Oliphant.	do.	Killed by a fall of roof coal and slate while trying to take it down.
Feb. 15.	Antonio Newark.	do.	23	S.	...	Grace.	do.	Killed by a mine fire; body recovered July 25.
15.	Andy Rohovel.	do.	12	S.	...	do.	do.	Killed by a mine fire; one hand recovered July 25; body not recovered.
15.	Chas. Rohovel.	do.	14	S.	...	do.	do.	Killed by a mine fire; body not recovered.
Mar. 3.	Shander Barto.	do.	28	M.	...	Paul.	do.	Burned by gas; disobeyed mine bosses' order.
May 26.	Chas. Parker.	Driver.	18	S.	...	Redstone.	do.	Crushed between wagons and rib.
June 12.	Frank Cervinka.	Miner.	36	M.	5	Trotter.	do.	Killed by a fall of slate and coal on a rib working.
July 3.	Joseph Rye.	do.	28	M.	...	Leith.	do.	Injured by a fall of slate which broke his legs and caused internal injuries, from which he died.
6.	George Larne.	do.	42	M.	11	Grassy Run.	Somerset.	Killed by a fall of roof coal.
7.	John Hudock.	do.	29	M.	2	Leith.	Fayette.	Instantly killed by a fall of coal in his working place.
13.	Fred. Steffen.	Hauler.	16	S.	...	Henry Clay.	do.	Injured by being run over by trip coming up the slope; right leg broken and body bruised; died at hospital same day.
Aug. 31.	John Barbill.	Miner.	38	S.	...	Elm Grove.	do.	Killed by a runaway wagon in dip heading.
Sept. 3.	John Harding.	do.	40	M.	7	Anchor.	do.	Smothered by a fall of roof coal.
9.	Thos. Martin.	do.	22	S.	...	Mahoning.	do.	Killed by runaway cars in dip heading.
29.	Jas. Beeson.	do.	28	M.	...	Oliphant.	do.	Killed instantly by fall of roof in rib working.
30.	John Kimmel.	do.	46	M.	5	Cora.	do.	Smothered and two ribs broken by a fall of roof coal.
Oct. 27.	James Christmont.	do.	38	...	...	Leisenring No. 3.	do.	Head and face cut; hand almost severed from body. He was going for a light for his lamp when caught by the trip.

31.	Joseph Logan,	Sinker,	38	M.	6	Leisenring No. 2,	do.	Fell from rope in shaft; was instantly killed.
Nov. 5.	Andy Dusco,	Miner.	32	M.		Leith,	do.	Crushed by a fall of slate and coal; lived only five minutes.
16.	Tony Sarto,	do.	50	M.	6	Smocks,	do.	Instantly killed by a fall of coal.
20.	John Albright,	Pumper.	17	S.		Lemont,	do.	Caught between wagon and rib while trying to lift a wagon on the track; head badly crushed; died the next day.
Dec. 7.	Steve Poconta,	Miner.	35	M.		Davidson shaft,	do.	Instantly killed by being thrown off cage; body badly mangled.
23.	George Mafflaur,	do.	32	M.	2	Rainbow,	do.	Burned by gas explosion; died December 25.

TABLE V.—*List of Non-Fatal Accidents occurring in and about the Mines of the Fifth Bituminous Mine District for the year ending December 31, 1891.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	No. of children.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
Jan. 13.	John Molner.	Miner.	32	S.	..	Redstone shaft,	Fayette.	Leg broken by fall of slate.
Apr. 15.	George Pyle.	Hauler.	29	M.	1	Painter.	do.	Caught between wagon and rib; badly squeezed.
29.	Walter Welling.	Miner.	22	S.	..	Junction.	do.	Was drawing posts in a place he was forbidden to enter; leg hurt and back sprained.
May 20.	Andy Sabal.	Miner.	50	M.	..	Grace.	do.	Was drawing stumps in 5th butt entry 7th flat when a post fell out and broke his thigh.
30.	David Williams.	Miner.	40	M.	..	Plum.	do.	Was burned when firing a shot.
June 15.	George Olear.	Miner.	32	S.	..	Nellie.	do.	Ribs broken and severely crushed by cage coming down upon him.
18.	William Kram.		31	M.	3	Plumer.	do.	Hurt by fall of slate due to disregard of mine boss' orders.
25.	John Lotz.	Miner.	25	S.	..	Junction.	do.	Leg broken in two places above knee by fall of horse-back from roof.
26.	James Trump.	Miner.	37	M.	..	West Leisenring.	do.	Right leg crushed by being caught between the bumpers of two wagons; leg amputated at hospital.
29.	Angelo Sarro.	Miner.	34	M.	..	Leisenring No. 3.	do.	Foot and head bruised by fall of slate in his room.
30.	Tony Marino.	Miner.	30	S.	..	Plumer.	do.	Burned while making a powder cartridge.
July 21.	Martin Blafhersack.	Miner.	35	S.	..	Fort Hill.	do.	Head cut and bruised by a fall from roof of his room.
25.	Harvey Trader.	Hauler.	21	S.	..	Lemont No. 2.	do.	While hauling empty wagon into room was caught between wagon and rib, two of his ribs were broken.
29.	Terry Jones.	Miner.	35	M.	..	Valley.	do.	Was drawing ribs, had set brake-row and taken out back posts, but went back to see slate fall when a post flew out and struck him breaking his arm between shoulder and elbow.
Aug. 4.	Andew Smith.	Miner.	22	S.	..	Trotter.	do.	Neglected to post his room properly and a piece of slate fell between first post and face; slate threw him down and injured his shoulder and foot.
11.	John Yocum.	Mine-boss.	38	M.	..	Morrell.	do.	Went into face air-course to examine roof; placing his hand on a post it gave way and a quantity of slate fell on his leg breaking it above knee.
12.	Jacob Zemmick.	Miner.	40	M.	..	Lemont No. 2.	do.	Caught between wagon and rib, his leg was broken above ankle.
20.	Thomas Schollins.	Miner.	28	S.	..	Leisenring No. 3.	do.	Hurt by a fall of coal and slate while engaged in knocking out back posts in heading pillars.
20.	Frank Gallac.	Coupler.	18	S.	..	Trotter.	do.	Was caught between empty wagon and truck, leg crushed.

Aug. 22.	James McNutley.	Miner.	42	M. . .	Trotter.	Fayette.	Stone fell on his foot while removing a post from a rib working place.
29.	George Subcovit.	Hauler.	21	S. . .	Moreland.	do.	Arm broken ; a wagon jumped the track and caught his arm between rib and wagon.
Sept. 8.	Richard Lidow.	Door boy.	13	S. . .	Leisenring.	do.	Left leg and foot badly crushed necessitating amputation.
10.	Daniel Guinn.	Miner.	23	S. . .	Banning.	do.	Coal and slate fell on him breaking his leg and injuring his ankle.
16.	Andy Nychalk.	Miner.	. .	S. . .	Juniata.	do.	Leg broken by fall of roof in heading.
20.	Frank Myers.	Miner.	36	S. . .	Trotter.	do.	Leg bruised by fall of roof while pulling posts from rib working.
29.	William Hughes.	Hauler.	27	M. . .	Langhead.	do.	Hand crushed, caught between wagon and rib.
Oct. 5.	Par Salloy.	Loader.	35	M. . .	Redstone shaft. . . .	do.	Ankle displaced by fall of slate.
10.	Mathew Hicks.	Miner.	49	M. . .	Standard.	Somerset.	Shoulder and foot bruised by a fall of coal.
13.	Marion Miller.	Miner.	30	S. . .	Pennsville.	Fayette.	Right leg injured by horses starting while lifting on a wagon.
22.	John Goolns.	Miner.	30	S. . .	Redstone.	do.	Leg broken by fall of coal.
27.	George Zoyome.	Miner.	. .	S. . .	Redstone shaft. . . .	do.	Leg broken by fall of slate.
30.	Frederick Miller. . . .	Miner.	35	M. . .	Pennsville.	do.	Serious injury of back and hips, also head slightly injured by fall of slate.
30.	Mike Boman.	Miner.	19	S. . .	Leisenring No. 1. . .	do.	Leg broken by being caught between two empty wagons.
31.	Isaac Mattson.	Timberman.	43	M. . .	Stewart.	do.	Two ribs broken by coal falling from a wagon and striking him.
Nov. 3.	Jacob Bingle.	Driver.	22	S. . .	Adelaide.	do.	Six fingers cut off, three off each hand, by being run over by the trip.
13.	John Banks.	Roadman.	35	M. . .	Nellie.	do.	Badly bruised by a premature blast.
16.	J. B. Muray.	Horseback man. . .	36	M. . .	Morland.	do.	These men were injured by the explosion of a dynamite cartridge ; their bodies were burned and bruised.
	Robert Nelson.	Horseback man. . .	36	M. . .	Morland.	do.	
21.	Andrew Harris.	Miner.	74	M. . .	Uniondale.	do.	Finger taken off while trying to take out a sprag for the driver.
24.	John Hughes.	Telegraph operator.	19	S. . .	Banning.	do.	Leg broken by trying to couple cars.
30.	Steve Bender.	Door boy.	14	S. . .	Trotter.	do.	Leg crushed by jumping on loaded cars while in motion.
Dec. 22.	William M. Brown. . . .	Miner.	43	M. . .	Slater.	Somerset.	Foot mashed by fall of slate in his room.

SIXTH BITUMINOUS DISTRICT.

(BLAIR, CAMBRIA, CLEARFIELD, JEFFERSON AND WESTMORELAND COUNTIES.)

OFFICE OF INSPECTOR OF MINES,
JOHNSTOWN, PA., *February 22, 1892.*

HON. THOMAS J. STEWART, *Secretary of Internal Affairs:*

SIR: I have the honor of presenting herewith my seventh annual report for the Sixth bituminous district for the year ending December 31, 1891.

The tables giving the production of coal show 6,959,246 tons mined for 1891, but I add to this 40,754 tons as an estimate of the coal mined in five small operations which have not yet sent in their reports, which makes a total of 7,000,000 tons mined in 1891. The district is increasing very rapidly, possibly more so than any other in the state, as new coal fields are being opened up within its boundaries which are being developed very rapidly. Cambria county has an output of over 3,000,000 tons which is more coal than was mined in the whole district when I took charge in 1885. I am pleased to report a decrease in the accident list for 1891. The fatal accidents are but 13 against 15 in 1890, with an increase of production in coal of 1,209,286 tons. The number of non-fatal accidents has also decreased from 27 in 1890 to 20 for 1891. I would also state that 7 of the 13 who were fatally injured were non-practical miners, and about the same percentage of those non-fatally injured were of the same class.

I scarcely feel justified in commenting year after year upon the carelessness existing in our mines by the employes in neglecting to protect themselves, but would simply refer to the table with list of accidents and their causes.

As to the condition of the mines I am pleased to state that many improvements are being made in a large majority of them. There are some in the mining business like all branches who are very loath to make any improvements, but, upon the whole, their safety and sanitary condition

are fairly satisfactory under our present law which is not a very satisfactory one, as a much better law could be made and is needed for the benefit of both employer and employe. In another part of my report will be found a few remarks upon the condition of the mines in general and a brief report upon each mine, together with a few tables which I hope will be of interest.

Yours very resyectfully,

JOSIAH T. EVANS,
Inspector.

MINE STATISTICS.

Coal production as per tables,	6,959,246
Coke production as per tables,	1,330,374
Coal shipped in tons,	4,634,679
Number of men employed,	11,560
Number of men employed per fatal accident,	889
Number of men employed per non-fatal accident,	578
Number of tons mined per fatal accident,	538,461
Number of tons mined per non-fatal accident,	350,000

Number of mines in each county of which the district is composed with number of men employed and tons of coal mined in each.

Blair county—Number of mines,	6
Number of men employed,	614
Number of tons of coal mined,	218,955
Cambria county—Number of mines,	51
Number of men employed,	5,179
Number of tons of coal mined,	3,083,078
Indiana county—Number of mines,	5
Number of men employed,	396
Number of tons of coal mined,	276,510
Clearfield county—Number of mines,	6
Number of men employed,	521
Number of tons of coal mined,	192,144
Jefferson county—Number of mines,	12
Number of men employed,	3,205
Number of tons of coal mined,	2,003,651
Westmoreland county—Number of mines,	11
Number of men employed,	1,685
Number of tons of coal mined,	1,185,713

The following is a table showing the quantity of coal mined, and the persons employed in the district each year since 1885; also giving the quantity of coal mined per fatal accident during the same period and number of men employed per fatal accident, with increase of district, etc:

YEAR.	Coal production.	Number of men.
1885,	2,203,028	3,508
1886,	3,075,421	5,408
1887,	3,341,381	6,078
1888,	3,263,596	6,877
1889,	4,205,029	7,891
1890,	5,790,714	9,863
1891,	7,000,000	11,647
Total,	28,881,119	50,272

Increase of coal production in tons 1891 over 1885,	4,796,972
Increase of number persons employed,	8,199
Total number of accidents during this period of seven years,	57
Total coal production,	28,881,119
Number employed per fatal accident,	882
Number of tons mined per fatal accident,	506,686$\frac{1}{57}$

SUMMARY OF THE CONDITION OF THE MINES AT THE CLOSE OF 1891.

By a careful record kept of the air passing through all the mines in the district on my last examination, I find that 1,940,000 cubic feet per minute passed. The number of persons employed is about 9,240 in the mines; this would give to each about 210 cubic feet per minute, which shows a very satisfactory condition of the ventilation in general, but there are a few mines that do not come up to this mark by a great deal, as there is scarcely 100 cubic feet per minute entering them, while there are others that sufficient quantities are propelled into the mines, but it is not properly distributed and conducted to the face of the workings. This average of the quantity of air propelled into the mines for each person employed, naturally leads us to the conclusion that the means employed to ventilate the mines is adequate to the work. So then if the ventilating apparatus is sufficient to propel the quantity into the mine and the miners suffering for air, it must be the fault of the mine-boss for not conducting it properly around the working faces. I am compelled to say that this fault is too common in our mines to-day of neglecting to properly distribute and conduct the air to the men after it enters the mine. Some neglect this part of their work by allowing other duties to be forced on them, that should not be, while others omit that part of the work from a false notion of economy to save a few yards of air-ways, or a few hundred feet of lumber, or possibly a few yards of brattice cloth, while there may be a few who do not know how to conduct

the air through the mine properly. One of the faults, and I think the main one, that an Inspector has to complain of at present is of not properly conducting the air to the working faces of the mines, while there are other little deficiences to be noticed, that if properly attended to would lessen the complaints and increase the sanitary conditions of the mines very much, such as seeing that all doors and brattices are made as nearly as practicable air tight and kept in such condition, and where furnaces are used to have them properly attended to. I am compelled to say, from what I see nearly every day in the neglect of proper attention to furnaces, coupled with their inefficiency in our shallow mines to do the work of ventilating, and the neglect of keeping doors closed, that all furnaces should be replaced by fans, and a system of opening up mines (as far as practicable) on a plan to do away with doors, as there is more suffering in our mines to-day through breathing foul air on account of doors being left open that should be kept shut, than from any other cause. The sanitary conditions of our mines (especially our shallow mines) will never be what they should for the health and comfort of the employes until those two changes take place. From an economical standpoint this change should occur, as a fan is a much cheaper ventilator than a furnace, and a mine opened upon a system to ventilate without doors is much more economical than with doors. I am glad to see that our operators are fast being convinced that the fan is more economical than the furnace, as no less than eleven fans have been put in during the past year to replace furnaces. I hope that this will be kept up, and all our mines soon be ventilated with nothing but fans.

Cambria County Mines.

Rolling Mill Mine is operated by the Cambria Iron Company. Mining-boss, Mr. John Daniel. The drainage and ventilation of this mine are good. There is more fire-damp given off here than anywhere in the district, consequently it requires the greatest of care by those in charge to keep the mine in a safe and healthful condition. Notwithstanding its present and good condition, they are now putting a new opening to the mine at a great expense, to further insure the safety and health of the employes. The new opening will give, in conjunction with another outlet, a very much better chance to ventilate the mine. They have erected a new fan by which the mine is ventilated.

Haws Shaft is operated by A. J. Haws & Son. Mine-boss, David F. Jones. This mine is well ventilated and drained; they have just erected a fan to ventilate with in place of a furnace, although there are only about 25 men employed in this mine. I advised the putting in of a fan in place of a furnace as a means of economy, and those people were wide awake enough to see the advantage; the saving in the fan over the furnace will pay for itself in less than two years.

Argyle Mine is operated by Huff & Colter. Mining-boss, Reuben Ott.

The ventilation here is produced by a furnace which is possibly the only one in the district ventilated by this means, I do not feel like condemning them, not all for the same cause, some are not large enough, others have no upcast columns to create power and more of them are not attended to properly; this furnace is a very large one with an upcast or shaft of over one hundred feet and a good furnaceman kept especially to look after it. I have always found the ventilation and drainage of this mine good.

Aurora Mine is operated by Hurst & Lake. Mining-boss, Wendle Croyle. The ventilation and drainage of this mine I generally find in good condition and the general welfare of the men employed well looked after; they only employ about 35 to 40 men inside and outside of the mine; but it is in small mines of this kind that we find the greatest neglect, as the mine-boss is expected to do work that is foreign to his position, thus being compelled to neglect his own duty. The consequence is that the ventilation becomes stagnant and the men suffer.

J. C. Stineman Mine is operated by J. C. Stineman. Mining-boss, William Watkins. The ventilation is produced in this mine by a furnace, which when built was well adapted for the work it had to do, as the mine at that time was not working but litte more than half as many men as at present and possibly not half the distance for air to travel; the consequence is that the furnace is now wholly inadequate to perform the work of ventilating this mine as it should be done. Upon determining the matter of the furnace being too small to ventilate the mine, I at once notified Mr. Stineman of the fact and advised him to put in a fan, and I have no doubt that one will be put in there in a very short time, as I have always found him ready and willing to co-operate with me in doing all he can for the welfare of his employes.

South Fork Mine.—This mine is ventilated by the exhaust steam from pumps as it is all worked to the dip, it is a very poor power for ventilating with, but does fairly well in a small mine like this is, as they only employ about 25 men in the mine at present. Mine-boss, John McIntyre.

Webster No. 3 Mine is operated by Scott & Sons. Mine-boss, James Callahan. The drainage of this mine is good, but the ventilation on my last examination was a little weak at the face of the workings caused by one of the fans being burned. As the mine is ventilated by two fans, the one destroyed by fire was twelve feet in diameter, and is being replaced by a sixteen-foot fan, which will no doubt put this mine in first-class condition.

The capacity of this plant is nearly 1,500 tons per day, which is taken from the mine by two complete systems of rope haulage, the one conveys the coal from the workings above water level and the other hauls from the dip workings. The drainage in this mine is good, the greatest trouble being in the work above the water level which is to keep down the dust in the headings, as the seam is very dry.

Euclid Mine is now operated by the Euclid Coal Company. Mine-boss, William Farber. A furnace has been built here for producing the ventilation, but is seldom used, as the mine is connected with another opening which is nearly 200 feet lower than it is, this gives them a very nice current for the few men they employ in the summer or winter, while artificial power is required in the spring and fall when the temperature of the mine is the same, or near so, as that outside.

Ebervale Mine is operated by Hopfier & Milsom. Mining-boss, John Milsom. The ventilation here is produced by a furnace, which keeps the mine in a very fair condition, as the furnace is well-fired and stoppings and doors kept in good repair. There is to-day more suffering in our mines through neglect in keeping stoppings and doors closed than from any other cause, but I can say with their facilities they keep this mine in good condition.

J. C. Martin Mine.—They have put up at this mine a new twelve-foot Brazil fan to ventilate with, and I have no doubt this will very much relieve them here in the ventilation. I have not examined the mine since the fan has been erected. This plant is in charge of John Watt.

Portage Mine is operated by the Berwind-White Coal Company. It is a new operation and is not yet fully developed, not having thus far decided what power to use for ventilation, but I hope they will wisely decide to put in a fan which no doubt is the best and most economical.

Mount Vernon Mine is located at, or near Portage and operated by the Cambria Mining Company. The ventilation here was very defective for some time, as they had only a small furnace by which to ventilate with. They have now a twelve-foot Brazil fan in operation which gives great satisfaction in keeping the mine a good healthy condition. They have also much improved the drainage, so that the mine upon my last examination was in very fair condition.

Richland Mine is in charge of Mr. George Beil. The ventilation is produced by a well-built furnace which is looked after carefully, and keeps the mine in a very good condition as regards ventilation. The drainage here is good. The mine is comparatively a small one, yet they haul all their coal out by machinery, main and tail rope system of haulage, which works nicely and gives them very cheap haulage. The mine is located at Dysert on the Cresson and Coalport railroad.

Dysert No. 2 is located at Benscreek and operated by D. Langham. Mining-boss, Mr. Thomas Leahy. This mine, in connection with the Mentzer mine, is possibly the best located mine I know of in the district to be assisted by natural ventilation, as they are connected with one another, and the one lies nearly 400 feet above the other, so that a furnace used in the upper one in the cold weather and the furnace in the lower one in summer, would enable those parties to have as good ventilation as any mine in the state (as to the quantity coming into the mine) at a very low cost, but it seems when some men have nature to help them

they will not help themselves by taking advantage of the opportunity. I am compelled to state such is the case at these mines. They keep furnaces, at least there is a good furnace at this the Dysert mine, but they are no good to look at, they must be used by being fired up, and that with some system and care.

Benscreek Plane Mine is operated by E. W. Mentzer. This mine is the one connected with the Dysert No. 2 mine and should, as I stated about these mines in the Dysert report, be the best ventilated in the district by furnace ventilation, and that with a very nominal cost, but I am sorry to say that it is not by any means a model ventilated mine, far from it, though there have been a great many difficulties met with in this mine in the way of faults which have given them a great deal of trouble to keep up the air current to the face of the mine, but such is a part of mining, and should be overcome, so as not to let the miner suffer for air on account of troubles of this kind. I intend to have this party and those in charge of Dysert No. 2 put in a fan to ventilate their mines, and until this is done there will be trouble with the ventilation. As it seems to be a general failure throughout the district of neglecting to keep their furnaces properly heated up for ventilating, and very often to light up at all, and in our non-fiery mines, as our mountain mines are termed, and our shallow coverings, I am inclined to think that miners will suffer more or less for want of pure air until fans are universally adopted to ventilate with. Why they are not more generally used now is a mystery to me.

Mitchel Mine.—This mine is operated by J. L. Mitchel. The ventilation is produced here at present by a furnace which has recently been put in, along with a good, deep shaft at a very large expense, and this is the second air shaft and furnace that has been put in this mine for ventilating, though the mine is not three years old yet. Notwithstanding all this expense in putting in two shafts and a furnace in each, there has been some trouble in this mine with the ventilation up to the time of completing the last furnace, through a connection that was made with another mine which was opened on a lower level than this one (something like 400 or 500 feet) which destroyed the power of the old furnace.

They have now walled off this mine, thus disconnecting them entirely, and the result is now a well ventilated mine, which can be kept so, if they only keep up the furnace fire, to properly distribute the air after it enters the mine.

Sonman Shaft is ventilated by a fan. The greatest difficulty in this mine is that the fan shaft is entirely too small to take the air from the fan, notwithstanding this draw back it is by far the best ventilated mine in that community, as those in charge are constantly making improvements in the mine solely for the purpose of improving their ventilation. They are now preparing for separate currents.

Sonman No. 1 Mine.—This is one of the oldest mines at this point, and has been worked on the old plan of single heading, and was in rather a bad condition for ventilating and hauling, but they have now put in machinery for hauling the coal by the tail-rope system of haulage, and those operating the mine deserve great credit for the fine machinery that they have put in for hauling and for ventilating purposes, the latter being a very fine fan made by the Vulcan Iron Works of Wilkesbarre. But I will state here that those in charge of the mine have quite a job on their hands to carry the air to the working parts of this mine, as it is a regular sieve and will require some work to close up all the old openings, and in conjunction with that, a better system of mining adopted from this out, or else they will be but little better off by reason of their fan. Have not examined the mine since the new fan is in operation, but hope to find a great improvement in the ventilation when I do.

Cresson Shaft.—This mine has been idle nearly all the year, having been very unfortunate in having met with large outbrusts of water which overpowered their pumps and drowned out the shaft; this occurred twice during the last year, so that very little work was done during 1891. This is the deepest shaft in the district, being about 300′ in depth. They have as yet but one opening to the mine, consequently are only allowed to work but twenty men on one shift. The ventilation here is produced by means of a fan, 12′ in diameter, the shaft being partitioned off and one part used for a down-cast and the hoisting shaft is used for an up-cast. They are now working at the second opening by driving to a point where they have a 5″ hole drilled. This will enable them to sink the second opening or shaft without pumping their water. I feel that this company deserves better success in the future for their pluck in the past year, in the face of their misfortunes, which I hope they will have.

Great Bend No. 4 Mine.—This mine lies between Mountaindale and Lloydsville, on the Bell's Gap railroad or P. N. W. R. R.; it is a new colliery recently opened. Mr. William Bell has charge. The ventilation is produced by a furnace, which keeps the mine in a good healthy condition up to the present time. The system of mining is double heading. Drainage is also good.

Bland Mine is located just above the Great Bend Mine No. 4. They are working a bed of coal about 40′ higher in the strata. This mine is also ventilated by means of a furnace, which gives very good results, as the mine is small. Mining-boss, William Wright.

Max Frick Mine is another new operation on the P. N. W. R. R. near Lloydsville. As yet I have not had time to examine this mine. Mr. Charley Lamb has charge as mine-boss.

Mountaindale Mine is in charge of R. C. Simpson. Most of the coal from this colliery is used for making coke, as they have a plant of 40 coke ovens here. The seam of coal is very small, about 2′ 5″ in thickness, but it is of superior quality for coke. The mine is ventilated by

a furnace, which keeps up good ventilation, but the drainage is not very good, as there is a great deal of water given off in the mine on account of such loose strata overlying the coal bed.

There are two other small operations at this place, but they scarcely ever come under the law, as they do not employ more than 9 men, therefore I did not examine them. They are the McCartney and the Gwin mines.

Delany Mine is operated by the Altoona Coal and Coke Company. The opening is a slope on the pitch of the coal seam. The ventilation is produced by a furnace, and by splitting the air and using overcasts it gives very good results. The system of mining is double heading. The drainage could be improved by a little ditching, but upon the whole, the mine I consider is in good condition.

The Horse Shoe Mine, which is owned by this company, has been idle nearly the whole of the past year, therefore I have no report to make of it.

Amsbury Mine is located on the Cresson and Coalport railroad and operated by the Cresson and Clearfield Coal and Coke Company. There has been a new fan put up at this colliery during the past year, a Guibal, 15′ in diameter, which gives very satisfactory results in running at a rate less than half of its regular capacity; since this fan was put in there has been the best of ventilation in this mine. The drainage here was found to be a little faulty on last examination, but is reported now in a fairly good condition. Mr. Richard Bowen has full charge of this colliery.

Gallitzin Shaft.—Mine-boss, William Rodda. The ventilation I find generally in good condition in this mine, as every advantage is taken here of the laws that govern air in motion to lessen the friction, by splitting and shortening its route and also by giving it as large areas as is practicable. The result of this is that more air is circulated through the mine with its 12′ fan, by many thousands of feet, than in any other in the district. I would state just here that there is more suffering to-day in our mines from a want of properly distributing the air that is produced by the fans and furnaces than from the lack of means to produce air. It was the reverse a few years ago, so that in the majority of cases the fault lies at the door of the mine-bosses and not the operators at present. The drainage here could be greatly improved; the trouble is that the headings are driven too narrow to allow room for drains, though it is compulsory on them in several of their headings, as the top is very bad or weak, but the drainage has been somewhat improved lately.

Gallitzin Slope.—Mine-boss, Mr. Gowen Stoker. This is one of the most productive mines in the district, the capacity is about 1,500 tons a day. A very fine system of rope haulage is in use. The coal is not only conveyed along the gangways, but it is hauled from the cross headings with branch ropes very successfully. They have also in use here

two self-acting inclines, by which coal is dropped from the upper levels down to the main hauling roads to connect with the ropes. This complication of ropes sometimes makes it difficult to conduct the ventilation to all parts of the mine, but the ventilation here is in very good condition, excepting at times when too many men are worked in the same current of air. The drainage is also in good condition, as they keep an air-way on the lower side of each main hauling road, into which all the water is conducted, thereby keeping the hauling roads almost perfectly dry.

Dean Mine No. 2 is owned and operated by the Cresson and Clearfield Coal and Coke Company, and is in charge of Mr. George Simmers.

The ventilation of this mine is, or was on my last examination, a little weak at the face of the workings, but ere this is, no doubt, in much better condition, as they were driving through the hill and were expecting soon to get through; that would then give them great relief as it would at once reduce the distance one-half for their air to travel. The trouble here was that the furnace had too far to draw the air as it was. Generally I have found this mine in very good condition, even with the furnace ventilation, as they kept a good man to fire up their furnace and do not leave it to the mine-boss, driver or some small boy twelve or fourteen years old to attend to, as is too often done. The first party has no time to attend to it if he wished; the second party does not wish to attend to it, consequently will neglect it; the third party, if he wished to, cannot attend to it; so the result from this non-attention is men suffering for want of pure air.

Rubino Mine.—This mine is also operated by the Cresson and Clearfield Coal and Coke Company, and is in charge of Mr. William Simmers as mine-boss. The ventilation here is produced by a twelve-foot Brazil fan, and when examined last was found in an excellent condition as to both ventilation and drainage.

Clearfield County Mines.

Irvona Mine No 1 is operated by the Irvona Coal and Coke Company. Mine-boss, Archie Bathgate. Those in charge of this mine have had a great deal of up-hill work to contend with to keep running during the last year, with water and faults, it required no little skill and care to keep things going and to keep up the ventilation in the face of these troubles, but to the credit of those in charge of the mine, I can say that I never found anyone suffering very much for want of air, but found very wet roads sometimes; but the miners were always hauled in and out of the mine to prevent them from wetting their feet. Troubles of this kind very often occur that cannot be prevented, such was the case here.

Great Bend Mine No. 3 is located on the Bell's Gap railroad near Mountaindale. Mine-boss, Mr. John Cann. There has been considerable trouble in this mine during the last year from black-damp, or carbonic acid gas drifting into the workings from old and adjoining mines; this caused them to have to go over all the brattices between them and the old works, as it required a very close brattice to prevent this gas from getting out into their workings. This mine produced more black-damp than any I ever came across in all my life considering its size. For that reason it requires a very good current of air to keep it in a healthy condition. It is not expected to be very long until it will be worked out, as most of the work here now is on pillars and stump drawing.

Oakland Mine No. 2 is operated by Samuel Haggerty. Mine-boss, James McIntyre. Upon my last examination I found it in excellent condition as regards ventilation and drainage.

National Mine No. 1, is operated by the Whitmar Coal and Coke Company, and is in charge of Mr. Washington. I found it in a very good condition upon my last examination. A twelve-foot Brazil fan is in operation here, producing ventilation, which gives very good results, as those in charge are careful of the air and see to the proper circulation of it to the working faces.

National Mine No. 2 is operated by the same company. Mining-boss, William Kellar. The ventilation here is produced by a furnace, which is in charge of a good man and gives very good results. I have upon all my examinations found this mine well looked after and the air kept close to the face of the work, and the roads reasonably well drained.

Blair County Mines.

Bennington Slope is operated by the Cambria Iron Company. The ventilation is produced by a double Murphy fan, which keeps the mine in rather good condition. In my last report I spoke of this colliery as being nearly worked out and of some talk of abandoning it, but since that time they have commenced to reopen it and put it in shape for opening up into other coal fields which adjoin this mine. The system of mining here is not very favorable for first-class ventilation, as it is single heading, but those in charge of the work are very careful to keep up the air current to the face of the mine.

Porter Shaft.—This mine adjoins the Bennington slope, but I am sorry to have to say that the ventilation here is generally in a bad condition; about the time that one part of the mine gets fixed up in good shape, another part is neglected; but the main trouble is that they have nothing but a furnace to produce air, and that is isolated nearly half a mile from the other workings and is not attended to properly. This mine is nearly worked out.

Glen White Mine is operated by the Glen White Coal and Lumber Company. They have opened up a new mine on the E bed, their old

one having been opened on the B bed; the coal is used for coking purposes, the ovens are fully one mile and a half from the mine; the coal being hauled over a tram-road by mule power that distance, except about 1,500 feet, by which the coal is conveyed over a self-acting incline. This work is opened on the dip of the seam which is very heavy in that region, consequently the coal is hauled out by machinery. The mine is ventilated by a fan twelve feet in diameter, which keeps it in a good, healthy condition. Superintendent and mine-boss, Val. Eichenlamb.

Bird Eye Mine is located at Bennington and was operated by Mr. Baldridge & Co., in 1891, but is now in the hands of a new company. The ventilation, which is not very good, is produced by a furnace. I fully expect that there will be many improvements made in this mine during 1892 and among them an improvement in the system of ventilation.

Indiana County Mines.

There are five mines in this county belonging to this district, located on a branch road from the P. N. R. R. at Glen Campbell. Richart Bros. are operating the Penn mine, which is in the charge of Mr. William Treversick; upon my last examination it was found in a pretty fair condition, the only drawback being a too liberal use of brattice cloth doors, in place of regular wooden doors, with attendants for each; those cloth doors are mostly taken out now, and where needed, wooden doors are placed instead. The two next mines are the Glenwood No. 4 and No. 3 owned by the Glenwood Coal Company. No. 4 is in charge of Thomas Scullin and No. 3 in charge of Andrew Patrick; both of these mines were in good condition in ventilation and drainage when examined last. The remaining two are operated by Passmore & Co. Urey Nos. 1 and 2. The first is now in charge of Frank Bradley and No. 2 is in the charge of Thomas Bellis. The ventilation and drainage of both are good and are a credit to those who have labored to put them in their present condition.

Jefferson County Mines.

There are eleven mines in this county, all of which are located in what is termed the Punxsutawney region. Six of them are owned by the Bell, Lewis and Yates Coal and Coke Company.

Walston Nos. 1, 2 and 3 and Nos. 1 and 2 Adrain, and Elenora No. 1.—Walston No. 1 is ventilated by a twenty-foot Guibal fan and is kept reasonably well ventilated, considering that the work is very extensive and has met with considerable trouble in the form of anticlinals in the seam of the coal, which causes them to do a great deal of breaking up from their regular system of mining (which is square work and double heading) thus giving them considerable trouble to keep up the air to the face of the workings.

Walston Nos. 2 and 3 are connected and ventilated by one fan which is twenty-five feet in diameter.

No. 2 is a drift opening and is now on the decline, there being no headings driving, but nearly all the work is drawing stumps and pillars, except that in one portion of the mine they are trying to drive through a neck of coal to reach a patch of several acres of coal which is untouched. The ventilation is just fair, as doors and brattices are somewhat neglected through the mine being old and on the decline, but what is most injurious to the health of the miners, is the unlimited use of black-strap oil that is allowed to be burned in the mine. I have been in a current of air traveling at the rate of over 300 feet per minute in an area of 50 feet or more and I could scarcely see a light 25 feet ahead of me, from the smoke made from the use of this filthy oil, called by miners "black-strap."

I am somewhat surprised that the superintendents of those mines have not put a stop to the use of this oil in their mines long ago, for without it being stopped all the fans in creation would not keep the mines in a healthy condition. I think it is a pity that after the enormous expense that has been incurred in erecting such fine machinery by the company to ventilate with, that they should be in such an unhealthy condition through the use of this inferior oil.

No. 3 is a slope and through the workings of this mine all air goes to No. 2, consequently all the smoke made in No. 3 is carried to No. 2. The ventilation in No. 3 was considerably better on my last examination than I had found it on previous visits; the trouble here was caused partly by meeting faults in the coal and partly from heavy grades which had to be overcome in the mine, thus breaking up their regular system of mining and ventilation, but as stated I found on my last visit things in a much better shape, as they have got into a regular system of running their headings, thus enabling them to ventilate the work better.

Since I examined these mines last Mr. Robinson, the general manager, had taken a decided stand against the use of the inferior oils that are being burned in the mines, and has determined to use very stringent means, if necessary, to put a stop to it entirely. To stop the burning of black-strap oil or any other inferior oil of that kind in these mines will no doubt put them in the ranks of the best ventilated mines in the district, as the best of machinery is in use for producing ventilation here.

Adrain Mines.—These two mines at that point Nos. 1 and 2, are owned and operated also by Bell, Lewis & Yates. No. 1 is in charge of Thomas Scott, and is ventilated by means of a 200-foot Guibal fan, the condition of this mine is good in ventilation and drainage. No. 2 is in charge of Mr. Gregory ; this is the largest colliery in the district, employing about 511 men and boys in and around the mine. Prior to my last examination, the air was very much vitiated by the unlimited use of black-strap oil, but Mr. John H. Bell, the superintendent of the mine,

determined to put a stop to the burning of this inferior oil and has succeeded very well, so that it was like going into a new mine, so much purer was the air; there is a volume of from 75,000 to 80,000 cubic feet of air going into this colliery each minute, but with all that, when the inferior oil was being burned, it was a regular mist in the workings after ten o'clock in the day. Now this has been changed and it is much clearer and far purer air to breathe. They have met in this mine on one of their main levels off of the slope, a small quantity of fire-gas, and they now keep a regular fire-boss to examine the mine each morning before any one is allowed to go in. This gas was found after going through a large fault, and there has none been seen since, but the precaution of keeping a fire-boss is still kept up.

Eleanora Mine.—This is also owned by Bell, Lewis & Yates. Coal is hauled from this mine by the tail-rope system, and the ventilation is produced by a double Murphy fan; I found the ventilation a little defective in the dip portion of the work, but Mr. Craig, the mine boss, was working hard to remedy the defect which will be done by putting in a small furnace to ventilate the dip workings, independent of the main workings. This is another place where war is needed against the use of inferior oil in the mines. There is nothing that surprises me so much as this; it matters not how great a quantity of air is going through the works, it becomes so vitiated by the burning of such oils that it is totally unfit for men to breathe. Since my examination of this mine, I learn that the use of Black Strap oil in them for lighting purposes is strictly forbidden.

The remaining five collieries in Jefferson county are owned and operated by the well-known Berwind-White Coal Mining Company, who owns something like 10,000 acres of coal lands in Jefferson county, and have now in actual operation, as stated, five large collieries with a combined capacity of over 5,000 tons of coal per day, and have their sixth colliery nearly ready for operation, which will have a capacity of over 2,000 tons per day. The equipments at this mine are all of the best, and money is not spared to make it a model colliery, in fact this can be said of all their plants located here; they are a credit to them, as they are all equipped with the most improved machinery where such is being used. As an instance of their method of doing things well, there is a main hauling road in No. 2 mine with a complete double track; it is over one mile in length, and is as straight as an arrow; some places in this road they had to blast as much as 18 feet to make the grade uniform; the job of completing the road did not, I presume, cost less than $20,000 and I am satisfied that it has all been paid back by the savings in haulage.

No. 1 Mine is in charge of Mr. Moore. There is no new work in this mine excepting one heading which is being driven toward No. 5, the adjoining mine. The rest of the work is nearly all on stumps and pillars.

On my last examination here I found the air in one of the headings, No. 6, a little defective, caused by the connections made from this mine into No. 5, which left too much of the air escape into No. 5 from No. 1; thus robbing No. 6 heading of its portion of air. I had that remedied before I left the mine, otherwise it was in a fairly good condition, in ventilation and drainage. A Guibal fan 16 feet in diameter is producing the air for this mine.

No. 5 Mine which adjoins No. 1, is in the charge of Mr. Woods as mine-boss; this is ventilated by means of a double Murphy fan, but since the connection has been made from No. 1 mine, about 15,000 feet of air is supplied from these to feed No. 5 mine, thus giving them pretty good ventilation at present.

No. 2 Mine is in charge of Benjamin Lewis and is ventilated by a 20-foot Guibal fan. The ventilation and drainage here is good, the only drawback being, that in one or two of the face headings where the air reaches last, it is a little smoky from the burning of lamps, powder smoke, etc.; a relief for this would be a couple more splits, something which Mr. Lewis would have had put in, but they have a great many faults in the mine and this has prevented him from making this improvement to his ventilation.

No. 4 Mine is in charge of Mr. Harvey. The ventilation is produced here by a Brazil fan 20 feet in diameter, and upon my last examination I found the work in excellent condition as to ventilation and drainage; the coal is all shipped from the mine by rail, while a big portion of the coal from No. 1, 2 and 5 is being coked in ovens at the mines.

Anita Mine is in the charge of Mr. Booth. This is the only colliery that this company has in the neighborhood, which is ventilated by a furnace, but it is a very large one, 6 feet clear of the bars and 8 feet wide and 16 feet long with 8 feet grate-bars. The mine is very nicely laid out for ventilation and haulage. There are three main headings, running parallel and the center one is used for a return air-way for the whole mine, and each of the other two are intakes to supply each side of the work, and the air-shaft is sunk at the starting point of this middle heading or return air-way. This enables those in charge of the mine to keep all the smoke off of the main hauling roads, by returning it into this separate return air-way at the face of the mine. It is well ventilated, but very much troubled with water, as there are many local swamps in the mine and it is consequently difficult to drain.

Summit Mine is located on the P. & N. R. R. about 6 miles out of Punxsutawney; they employ at this mine about 40 men and ventilate with a furnace; it has not been long since they have employed enough men to come under the law consequently I did not examine it. Mine-boss, John Smith.

Westmoreland County Mines.

Lockport Mine.—This is not a very large operation, but upon every examination made, it was found in good condition; the ventilation is produced by means of a furnace. The coal mined is all used for making coke; it is the "E" bed which has good coking qualities.

Isabella Mine is operated by the Isabella Furnace Company, and the coal is used entirely for making coke. The drainage of this mine is very good, but it could be improved in its sanitary condition by having a better power in use for ventilating; at present it is the exhaust steam, and steam pipes being in the return air current, which gives them the power. The mine is very favorably situated for good ventilation, by having outlets or rather inlets made at the face of the workings which very much shorten the distance of air-currents to travel. If not for this advantage, they could not ventilate at all with their present system. Mining-boss, Mr. Morris J. Lewis.

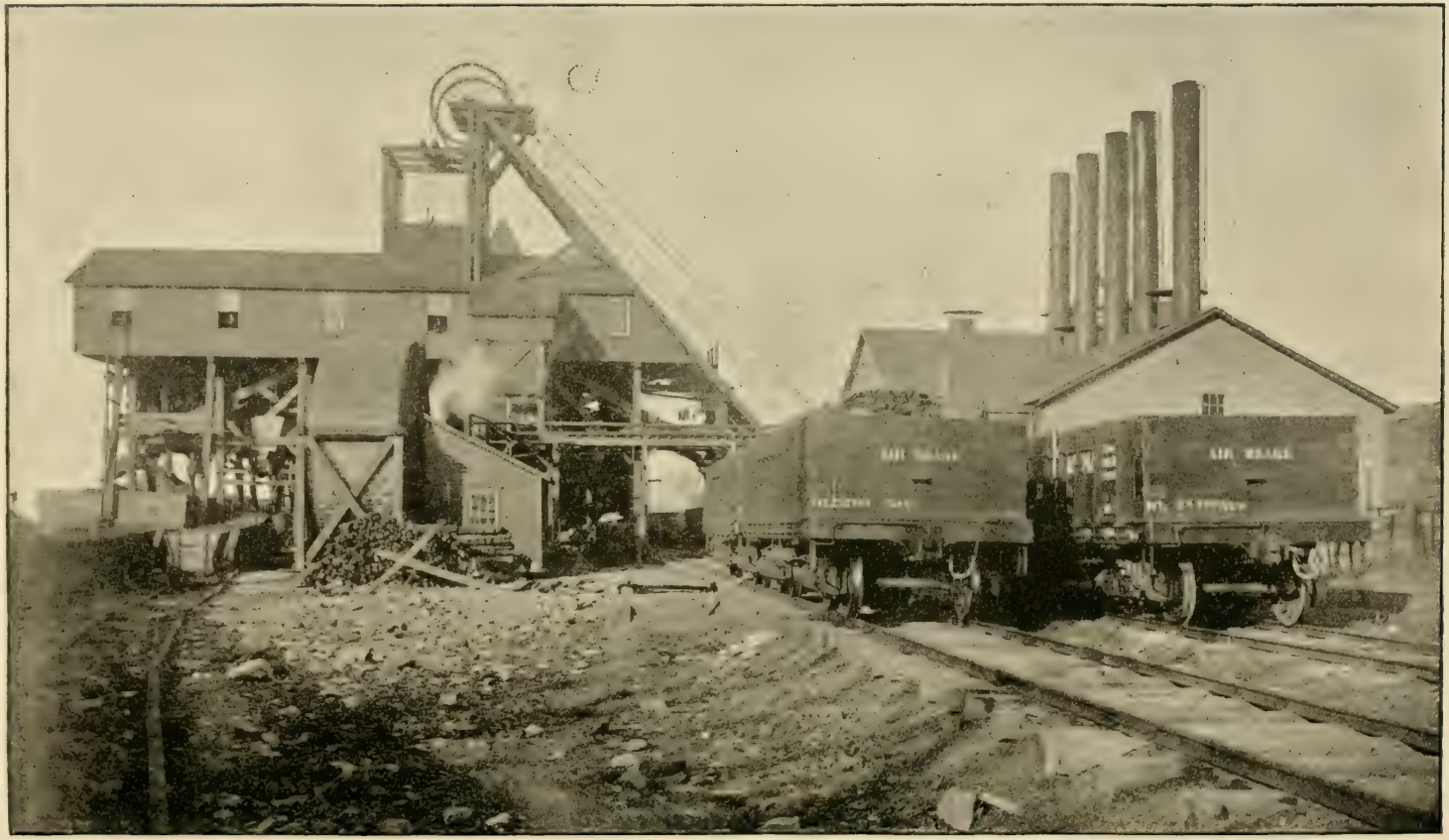
Millwood Shaft.—This mine is operated by the Millwood Coal Company. As to its sanitary condition, I can repeat what I have said of it each year since I have been examining it, and that is, a well-drained and ventilated mine, and that all precautions necessary for the safety of the men, are taken here.

St. Clair Mine is operated by the St. Clair Coal and Coke Company. The ventilation here is produced by a furnace which has by far the deepest up-cast shaft in the district; in conjunction with the furnace they have a large fire place and boiler, beside each other, both of which are in a regular rock heading several feet above the coal. They only employ about 50 or 60 men, and I usually find from 20,000 to 25,000 cubic feet of air passing per minute. The coal is hauled out by the main and tail rope system. Superintendent and mine-boss, P. J. Slavin.

M. Saxman Mine is located at Latrobe and operated by M. Saxman. The drainage of this mine is excellent, but I cannot say much for the ventilation as it is not regular enough, and needs a good fan to produce a regular current. With the means at hand the mine is kept in a very fair condition. Mine-boss, John C. Dorry.

Derry Shaft.—This is one of the most systematic mines in the district in its arrangements of haulage, drainage, and door fixtures for conducting air through the mines; there is one more improvement yet required here, which they are now working on, and that is a new return air-way by which they will be enabled to ventilate each section of the mine separately. The drainage and ventilation is excellent, the latter can only be improved by further splitting the air which will soon be done; ventilation is produced by means of a fan. Mine-boss, John Baker.

Latrobe Coal Works.—This mine is ventilated by a 15-foot diameter fan, which gives great satisfaction. The drainage and ventilation of



PANDORA SHAFT, LOYALHANA COAL COMPANY, LATROBE, PA.

this colliery is good; haulage is done from the mine by means of main and tail rope system.

The system of mining is all double headings, but rooms only allowed to be turned off of one heading, the other being used entirely for a return air-way from the face of each heading. Mine-boss, Alex. Snedden.

Monastery Slope.—There has been a great improvement made here during the year 1891. There was a small shaft sunk near the face of the slope which is run down on the pitch of the coal seam, and they have now widened this out to 6′×8′ and timbered it with heavy timber and lined it with flooring boards, and erected a head frame about 25 feet in height and put on a steel cage 5′×7′ fitted with safety catches, etc., and a new hoisting engine, size of cylinders 9″×12′ and a 1″ steel wire rope. They hoist the coal they need for their boilers which furnishes steam for pumps at this shaft, but it is principally put here as a safety to hoist men from the mine in case of an accident. In addition to this, they have another shaft on the opposite side of the mine from where the shaft just spoken of is located, in which they have ladders, where men could escape from the mine, in case of an accident, to either of the other openings. To improve the drainage of the mines they have put in a new Gordon pump with a capacity of 10,000 gallons every 24 hours. And to improve the ventilation they had a new fan put up, 15 feet in diameter and five-foot face, which gives 39,200 cubic feet per minute, running at 48 revolutions per minute. This fan can be speeded up to give more than double that quantity without any injury to the fan or engine. An examination of the mine is sufficient evidence that those operating it desire not only to live up to the law, but to improve on the same, where it is necessary to insure health and safety. The mine is operated by the Frick Coal and Coke Company. Mine-boss, Enoch Rowley.

Loyalhanna and Pandora Mines are owned and operated by the Loyalhanna Coal and Coke Company, and are located about one mile east of Latrobe. The Loyalhanna Mine has been in operation over eighteen years; the face of the workings is therefore a great distance from the hoisting shaft, but the coal is hauled out by the main and tail rope system; the workings are south from this shaft and on the dip of the seam. The plan of mining is all double headings. The new shaft, the Pandora, is opened on the coal lying north of the old shaft, this is one of the model plants of the district.

They have erected at this shaft a Guibal fan 25′ in diameter by 8 feet face, by which this mine and the Loyalhanna is ventilated.

The system of ventilation at the Pandora is separate splits for each section of work, thus doing away with doors in the mines. There is also an electric motor of 110 horse power which weighs 21,000 pounds, and runs on a 44″ gauge track, in use for hauling out the coal on the main gangways. Since the erection of this fan there is quite a brisk ventilation in both these mines.

In conjunction with the new shaft, fan and electric motor, they have built 27 new and commodious houses for their workmen, and erected 136 new coke ovens of the beehive type. And have procured 500 new railroad cars of 60,000 pounds capacity, which are all equipped with the most improved air brakes, draughts and couplers.

These two plants are now in a very good condition for a large output of coal, and I consider the sanitary condition of the mine of the greatest importance, as without good ventilation a large output cannot be kept up at any mine. Mining-boss of Loyalhanna, Alex. Parks. William Howarth has charge of the Pandora.

TABLE I.—*Showing Location, &c., of Colleries in the Sixth Bituminous Mine District.*

NAME OF COLLIERY.	Name of Operator.	Location—County.	Name of Superintendent.	Postoffice Address.
Argyle	Huff & Coulter	Cambria	J. P. Wilson	South Fork, Cambria county.
Aurora	Herst & Luke	do.	D. W. Luke	do. do.
Amsbury	Cresson and Clearfield Coal and Coke Company	do.	P. H. Wall	Frugality, Cambria county.
Adrian No. 1	Rochester and Pittsburg Coal and Iron Company	Jefferson	John H. Bell	Delaney, Jefferson county.
Adrian No. 2	do. do.	do.	do.	do. do.
A. J. Haws & Son	A. J. Haws & Son	Cambria	H. Y. Haws	Johnstown, Cambria county.
Bear Ridge	Bear Ridge Coal and Coke Company	do.	Joseph Smith	Mountaindale, Cambria county.
Benscreek plane	E. W. Mentzer	do.	E. W. Mentzer	Hollidaysburg, Blair county.
Bland	Fred Bland	do.	Fred Bland	Blandsburg, Cambria county.
Bennington slope	Blair Iron and Coal Company	Blair	Martin Meagher	Gallitzin, Cambria county.
Columbia	J. L. Mitchell	Cambria	Wm. M. Smith	do. do.
Continental		do.	Charley Hughes	Altoona, Blair county.
Cresson shaft	Cresson Cambria Company	do.	John Powell	Cresson, Cambria county.
Cushon	Cambria Iron Company	do.	Wm. Morris	Johnstown, Cambria county.
Caldwell	Caldwell	do.	I. Caldwell	Portage, Cambria county.
Delany	Altoona Coal and Coke Company	do.	John Monroe	Delaney, Cambria county.
Dysert No. 1	Canon Leahy	do.	Canon Leahy	Lilly, Cambria county.
Dysert No. 2	D. Laughman & Co.	do.	Thomas Leahy	do. do.
Dean	Cresson and Clearfield Coal and Coke Company	do.	P. H. Wall	Frugality, Cambria county.
Derry shaft	Derry Coal and Coke Company	Westmoreland	Ed. Saxman	Latrobe, Westmoreland county.
Euclid	Euclid Coal Company	Cambria	J. H. Dietrich	Altoona, Blair county.
Eldorado				
Elenora				
Ebervale	Hopfler & Wilson	Cambria	John Wilson	Portage, Cambria county.
Gallitzin slope	Gallitzin Coal and Coke Company	do.	Wm. M Smith	Gallitzin, Cambria county.
Gallitzin shaft	Taylor & McCoy	do.	J. F. McCoy	do. do.
Great Bend No. 2	Great Bend Coal Company	do.	John E. Bell	Bellwood, Blair county.
Great Bend No. 3	do. do.	Clearfield	do.	do. do.
Great Bend No. 4	do. do.	Cambria	do.	do. do.
Glen White	Glen White Coal and Lumber Company	Blair	Valentine Eichelaub	Glen White, Blair county.
Gwin	Gwin & Son	Cambria	Luther Gwin	Mountaindale, Cambria county.
Glenwood No. 3	Glenwood Coal Company	Indiana	C. Campbell	Glen Campbell, Indiana county.
Glenwood No. 4	do. do.	do.	do.	do. do.
Horse Shoe	Altoona Coal and Coke Company	Blair	John Monroe	Delaney, Cambria county.
Hastings	Chest Creek Coal and Coke Company	Cambria	W. C. Shiffler	Hastings, Cambria county.
Irvona No. 1	Irvona Coal Company	Clearfield	John McNulty	Coalport, Clearfield county.
Irvona No. 2	do. do.	do.	do.	do. do.
Isabella Furnace	Isabella Furnace Company	Westmoreland	W. C. Grist	Blairsville, Indiana county.
Ingleside	Ingleside Coal Company	Cambria	Alfred Slater	Johnstown, Cambria county.
J. C. Stineman	J. C. Stineman	do.	W. J. Stineman	South Fork, Cambria county.
J. C. Martin	J. C. Martin	do.	John Watt	Portage, Cambria county.
Lemon	Cambria Iron Company	Blair	Martin Meagher	Gallitzin, Cambria county.
Loyalhanna	Loyalhanna Coal and Coke Company	Westmoreland	J. C. Menoher	Loyalhanna, Westmoreland county.
Latrobe Coke Works	Latrobe Coal and Coke Company	do.	D. W. Jones	Latrobe, Westmoreland county.
Lockport	Boliver Coal and Coke Company	do.	Wm. L. Naucarrow	Lockport, Westmoreland county.
Lilly slope	Lilly Coal Company	Cambria	Charley Hughes	Altoona, Blair county.
Max Frick	Max Frick	do.	Max Frick	Lloydville, Cambria county.

TABLE I—*Continued.*

NAME OF COLLIERY.	Name of Operator.	Location—County.	Name of Superintendent.	Postoffice Address.
Monastery slope	H. C. Frick Coal and Coke Company	Westmoreland	A. F. Downing	Latrobe, Westmoreland county.
M. Saxman	M. Saxman, Jr., & Co.	do.	Frank Kurman	do. do.
Millwood shaft	Millwood Coal and Coke Company	do.	E. B. Kimmel	Millwood, Westmoreland county.
Mount Vernon		Cambria	E. S. Brubaker	Portage, Cambria county.
Mineral Point	Reighard and Page Heirs	do.	Emanuel Reighard	Mineral Point, Cambria county.
National No. 1	Philadelphia Coal and Coke Company	Clearfield	W. W. Helman	Irvona, Clearfield county.
National No. 2	do. do.	do.	do.	do. do.
Oakland No. 2	Samuel Haggerty	do.	Samuel Haggerty	Coalport, Clearfield county.
Oak Ridge	Dunwiddie & Campbell	Cambria	James Campbell	Hastings, Cambria county.
Puritan shaft	Lambert, Scott & Co.	do.	Joseph Campbell	Portage, Cambria county.
Porter shaft		Blair	C. H. Porter	Hollidaysburg, Blair county.
Penn	Reakart Brothers	Indiana	Wm Treversick	Glen Campbell, Indiana county.
Portage	Berwind White Coal Company	Cambria	Peter Cameron	Houtzdale, Clearfield county.
Rubino	Cresson and Clearfield Coal and Coke Company	do.	P. H. Wall	Frugality, Cambria county.
Rolling Mill	Cambria Iron Company	do.	Wm. Morris	Johnstown, Cambria county.
Richland	Richland Mining Company	do.	George Bell	Dysert Cambria county.
South Fork	George B. Stineman	do.	George B. Stineman	South Fork, Cambria county.
Sonman No. 1	W. H. Piper & Co.,	do.	John Leahy	Lilly, Cambria county.
Sonman No. 2	do. do.	do.	do.	do. do.
S. H. Smith	Ligonier Coal Company	Westmoreland	Daniel Craig	Latrobe, Westmoreland county.
St. Clair	St. Clair Coal and Coke Company	do.	P. J. Slavin	Bradenville, Westmoreland county.
Sterling	Sterling Coal Company	Cambria	J. Spangler	Hastings, Cambria county.
Sterling	do. do.	do.		do. do.
Sterling	do. do.	do.		do. do.
Standard	Standard Coal Company	do.	Richard Hughes	Altoona, Blair county.
Sonman shaft	Soman Shaft Coal Company	do.		
Summit	Summit Coal Company	Jefferson	C. F. Frazer	Tyrone, Blair county.
Van Ormer	Van Ormer Coal Company	Cambria	James Woffendon	Van Ormer, Cambria county.
West Eureka No. 1	Berwind White Coal Company	Jefferson	Thomas Fisher	Horatio, Jefferson county.
West Eureka No. 2	do. do.	do.	do.	do. do.
West Eureka No. 4	do. do.	do.	do.	do. do.
West Eureka No. 5	do. do.	do.	do.	do do.
West Eureka No. 10	do. do.	do.	do.	do. do.
Webster No. 3	John C. Scott & Sons	Cambria	Philip Hartman	South Fork, Cambria county.
Walston No. 1	Rochester and Pittsburg Coal and Iron Company	Jefferson	G. W. Snyder	Walston Mines, Jefferson county.
Walston No. 2	do. do. do.	do.	do.	do. do.
Walston No. 3	do. do. do.	do.	do.	do. do.

TABLE II.—*Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Sixth Bituminous Mining District for the year ending December 31, 1891.*

NAMES OF COLLIERIES.	Location County.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Argyle	Cambria	155,312		155,312	313	178			540		27		
Aurora	Cambria	36,491		36,491	243	34			300		4		
Amsbury	Cambria	67,812	5,808	58,812	242	142			520	2	12		20
Adrain No. 1	Jefferson	373,167	135,637	284,080	248	511	2	3		7	50	2	440
Adrain No. 2	Jefferson	139,379			196	210	2			2	15		
A. J. Haws	Cambria	23,620			313	40			150	2	2		
Bensereek plane	Cambria	68,570		68,570	240	152			300		12		
Bland	Cambria	21,686			300	26			75		3		
Bennington slope	Blair	67,256	40,225	5,835	302	174			40	5	26		75
Bear Ridge	Cambria	28,596	14,845	5,311	260	61			130	1	4	1	40
Cushon	Cambria	51,244		51,244	282	83			123		12		
Columbia	Cambria	61,495		61,495	187	102			125		8		
Cresson shaft	Cambria	3,267		2,519	58	25			21	3	3		
Caldwell	Cambria	2,000		2,000	40	23			20		1		
Delany	Cambria	162,600	31,343		290	250			2,000	2	22	1	97
Dysert No. 1	Cambria	8,651		8,651	228	22			118		4		17
Dysert No. 2	Cambria	81,615		81,415	275	152			300		18		
Dean	Cambria	190,000		190,000	260	214			900		12		
Derry shaft	Westmoreland	187,970	109,394	29,778	301	218				4	20		182
Euclid	Cambria	27,278		28,828	270	58			90		5		
Eldorado	Cambria	9,174		9,174	240	12			50		2		
Ebervale	Cambria	25,598		25,598	192	54			90		3		
Elenora	Jefferson	106,508		106,112	232	294		1	1,500	3	33		
Fenn	Cambria	6,000		6,000	300	10			50		1		
Gwin	Cambria	7,574			220	14			30		1		
Gallitzin slope	Cambria	227,384	73,663	103,993	220	374			928	5	24		172
Gallitzin shaft	Cambria	190,482	93,689	42,436	255	348	2	1	800	7	21		240
Great Bend No. 2	Cambria	48,620		48,620	223	67			750		4		
Great Bend No. 3	Clearfield	6,425		9,425	189	18			80		2		

TABLE II—*Continued.*

NAMES OF COLLIERIES.	Location County.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Great Bend No. 4	Cambria	27,661		27,661	214	49			675		2		
Glen White	Blair	46,000	29,000	700	275	161			110	3	12	1	97
Glen Wood Nos. 3 and 4	Indiana	147,472		147,290	240	160			500		20		
Hastings	Cambria	124,472	59,204	22,606	233	239		3	805		24		152
Horse Shoe	Blair	10,500			147	55					2		24
Irvona Nos. 1 and 2	Clearfield	58,772	27,736	16,168	240	90			250		18		20
Isabella furnace	Westmoreland	180,000	108,000		300	237				2	30	1	51
Ingleside	Cambria	34,400		34,400	210	64			360		4		
J. C. Stineman	Cambria	130,500		130,500	280	166			600		35		
J. C. Martin	Cambria	32,008	1,347	29,711	230	68			321	1	5		72
Lemon	Blair	36,180	10,027	19,109	201	78			140		5		25
Loyalhanna	Westmoreland	296,467	34,173	216,766	282	347		1			28		25
Latrobe Coal Works	Westmoreland	148,071	45,454	73,998	284	183				3	25		100
Lockport	Westmoreland	28,320	15,576	2,126	281	45			148	1	3		53
Lilly slope	Cambria	32,000		32,000	226	80			30	1	2		
Max Frick	Cambria	3,500		3,500	80	20			45		1		
Monastery slope	Westmoreland	84,919	51,000		191	202		1	200	10	20		204
M. Saxman	Westmoreland	87,273	32,785	43,329	286	88				2	10		59
Millwood shaft	Westmoreland	52,729		50,000	200	110			120	3	8	1	
Mount Vernon	Cambria	35,000		35,000	160	101			98	1	2		
Mineral Point	Cambria	18,195		18,070	300	16			150		3		
National No. 1	Clearfield	58,707	40,000	15,000	262	188			300	1	7		100
National No. 2	Clearfield	38,225	15,617	22,608	175	82			200		4		
Oakland No. 2	Clearfield	30,000		30,000	180	43			100		4		
Oak Ridge	Cambria	28,663		27,997	115	47			30		3		
Pandora shaft	Westmoreland	26,268	233	22,765	100	111				5	3		
Puritan shaft	Cambria	10,500		10,500	75	44			100		3		
Penn	Indiana	63,700		63,700	185	108			500		3		
Porter shaft	Blair	33,845		33,845	192	93			24	2	17		
Portage	Cambria	7,327		7,327	212	37			40		2		
Rolling Mill	Cambria	172,102		172,102	298	280		1	763	6	24		
Rubino	Cambria	120,000	45,000	52,500	250	123			900	1	6		88
Richland	Cambria	28,013		28,013	205	55			375		4		

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TABLE III.—*Showing the number and class of Employes at each Colliery in the Sixth Bituminous Mine District during the year 1891.*

NAMES OF COLLIERIES.	Location.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand totals—inside and outside.
		Inside foreman or mine boss.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Doorboys and helpers.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Coke drawers.	All company men.	Superintendent, book-keepers and clerks.	Total outside.	
Argyle	Cambria	1	120	18	5	21		165	1	3			8	1	13	178
Aurora	Cambria	1	25		1	4		31						1	3	34
Amsbury	Cambria	1	97	3	13	11	4	129	1	2	2	6		2	13	142
Adrian No. 1	Jefferson	2	340	10	4	30	11	397	1	6	5	100		2	114	511
Adrian No. 2	Jefferson	1	170	10	2	15	2	200		2	2		6		10	210
A. G. Haws	Cambria	1	24		5	2		32		1	3		3	2	8	40
Benscreek Plane	Cambria	1	110	7	9	12	7	146	1	1			3	1	6	152
Bland	Cambria	1	20		1	2		24					2		2	26
Bennington slope	Blair	1	85	12	5	12	4	119	1	4	2	28	18	2	52	171
Bear Ridge	Cambria	1	32	2	1	4	1	41	1	1	1	15		2	20	61
Cushon	Cambria	1	57	3	1	10	2	74		1			7	1	9	83
Columbus	Cambria	1	80	2	1	9	4	97		1			4		5	102
Cresson shaft	Cambria	1	16		1	2		20		1	2			1	5	25
Caldwell	Cambria	1	20		1			22						1	1	23
Delany	Cambria	1	160	4	5	15	10	195	1	2	2	25	23	2	55	250
Dysert No. 1	Cambria	1	9	3	4	1	1	19	1	1				1	3	22
Dysert No. 2	Cambria	1	98		3	18	3	123	1	3			3	2	9	132
Dean	Cambria	1	160	15	3	12	6	197	1	2			10	4	17	214
Derry shaft	Westmoreland	2	115		9	14	5	145		3	3	60	4	3	73	218
Euclid	Cambria	1	28		1	4		34		1			2	1	4	38
Eldorado	Cambria	1	9			1		11						1	1	12
Eleanora	Jefferson	1	225	20	4	19	5	274		2	4		12	2	20	294
Ebervale	Cambria	1	45	1		4	1	52					2		2	54
Fenn	Cambria	1	8			1		10								10
Gwin	Cambria	1	9			1		11					2	1	3	14

Gallitzin slope	Cambria	1	252	14	6	14	13	300	2	4	4	56	7	1	74	374
Gallitzin shaft	Cambria	1	200	15	6	20	5	247	1	2	3	92	. . .	3	101	348
Great Bend No. 2	Cambria	1	46	4	4	4	4	64	. . .	1	. . .	. . .	1	1	3	67
Great Bend No. 3	Clearfield	1	9	. . .	2	2	1	15	. . .	. . .	. . .	. . .	2	1	3	18
Great Bend No. 4	Cambria	1	36	. . .	4	3	1	45	1	1	. . .	. . .	1	1	4	49
Glen White	Blair	1	92	2	4	8	1	108	2	2	2	43	. . .	4	53	161
Glenwood Nos. 3 and 4	Indiana	2	135	2	2	9	2	152	. . .	1	. . .	. . .	4	3	8	160
Hastings	Cambria	1	145	6	2	8	5	167	1	2	2	56	10	1	72	239
Horse Shoe	Blair	1	50	1	8	2	2	63	1	2	1	8	. . .	. . .	12	75
Irvona Nos. 1 and 2	Clearfield	1	40	8	2	6	2	59	1	1	3	25	1	. . .	31	90
Isabella Furnace	Westmoreland	1	160	2	13	15	2	139	1	8	8	48	31	2	98	237
Ingleside	Cambria	1	50	2	2	4	1	60	. . .	1	. . .	. . .	2	1	4	64
J. C. Stineman	Cambria	1	120	10	3	18	4	156	1	2	1	. . .	5	1	10	166
J. C. Martin	Cambria	1	53	2	. . .	5	. . .	61	1	. . .	. . .	4	2	. . .	7	68
Loyalhana shaft	Westmoreland	1	241	5	13	21	13	294	1	6	8	21	13	4	53	347
Latrobe Coal Works	Westmoreland	1	113	. . .	5	14	1	134	1	4	3	20	19	2	49	183
Lockport	Westmoreland	1	22	2	1	2	. . .	28	. . .	. . .	1	14	. . .	1	17	45
Lemon	Blair	1	41	5	3	4	. . .	54	. . .	1	. . .	14	8	1	24	78
Lilly slope	Cambria	1	56	6	6	3	2	75	. . .	1	1	. . .	. . .	2	5	80
Monastery slope	Westmoreland	1	93	3	6	13	3	119	2	3	6	70	. . .	3	83	202
M. Saxman	Westmoreland	1	47	2	5	9	2	66	1	1	1	18	. . .	1	22	88
Millwood shaft	Westmoreland	1	80	3	2	8	2	96	. . .	3	3	. . .	7	1	14	110
Mount Vernon	Cambria	1	80	1	1	7	2	92	1	1	1	. . .	4	2	9	101
Mineral Point	Cambria	1	10	. . .	. . .	2	. . .	13	1	. . .	. . .	. . .	. . .	2	3	16
Max Frick	Cambria	1	15	. . .	2	1	. . .	19	. . .	. . .	. . .	. . .	1	. . .	1	20
National No. 1	Clearfield	1	112	8	1	4	2	128	. . .	1	. . .	52	5	2	60	188
National No. 2	Clearfield	1	60	10	1	4	1	77	. . .	1	. . .	. . .	3	1	5	82
Oakland No. 2	Clearfield	1	25	7	4	3	1	41	. . .	1	. . .	. . .	. . .	1	2	43
Oak Ridge	Cambria	1	36	2	1	3	1	44	. . .	. . .	. . .	. . .	3	. . .	3	47
Pandora shaft	Westmoreland	1	77	2	14	3	. . .	97	1	3	3	. . .	4	3	11	111
Puritan shaft	Cambria	1	30	2	1	3	. . .	37	. . .	1	2	. . .	3	1	7	44
Porter shaft	Blair	1	41	21	3	15	2	83	1	2	2	. . .	4	1	10	93
Penn	Indiana	1	95	1	1	6	. . .	104	1	1	. . .	. . .	1	1	4	108
Portage	Cambria	1	29	1	1	2	. . .	34	. . .	1	. . .	. . .	2	. . .	3	37
Rubino	Cambria	1	60	8	2	4	4	79	1	1	2	28	8	4	44	123
Richland	Cambria	1	40	6	. . .	2	2	51	. . .	. . .	1	. . .	2	1	4	55
Rolling Mill	Cambria	2	188	34	7	17	5	253	1	4	5	. . .	15	2	27	280
South Fork	Cambria	1	24	2	1	3	. . .	31	. . .	1	2	. . .	3	1	7	38
Sonman No. 1	Cambria	1	100	7	10	18	5	141	1	4	1	. . .	5	3	8	154
Sonman No. 2	Cambria	1	120	7	10	20	6	164	1	4	. . .	6	. . .	2	13	177
S. H. Smith	Westmoreland	1	29	2	1	2	. . .	35	. . .	1	. . .	. . .	1	. . .	2	37
St. Clair	Westmoreland	1	57	. . .	3	8	1	70	1	2	3	23	6	3	37	107
Sterling No. 3	Cambria	1	53	3	. . .	3	. . .	60	. . .	1	. . .	. . .	3	. . .	4	64
Sterling No. 4	Cambria	1	87	5	3	6	2	104	. . .	2	3	. . .	8	. . .	13	117
Sterling No. 6	Cambria	1	38	. . .	. . .	1	. . .	40	. . .	1	. . .	. . .	1	. . .	2	42
Sterling Nos. 8 and 9	Cambria	1	195	8	5	18	5	232	1	4	3	. . .	10	2	20	252
Standard	Cambria	1	65	. . .	2	5	1	74	. . .	1	1	. . .	2	1	5	79
Sonman shaft	Cambria	1	110	10	4	11	6	142	1	1	2	. . .	4	. . .	8	150
Summit	Jefferson	1	30	2	1	2	. . .	36	. . .	1	. . .	. . .	3	. . .	4	40
Sandy Run	Cambria	1	7	. . .	. . .	1	. . .	9	. . .	. . .	. . .	. . .	. . .	. . .	. . .	9
Tipton	Blair	1	30	1	2	2	2	38	. . .	1	2	. . .	. . .	2	5	43
Trout Run	Cambria	1	40	5	1	6	2	55	1	. . .	1	. . .	3	. . .	5	60
Urey No. 1	Indiana	1	55	. . .	. . .	3	2	61	. . .	. . .	. . .	. . .	2	. . .	4	65
Urey No. 2	Indiana	1	50	4	. . .	2	2	59	. . .	. . .	. . .	. . .	2	2	4	63
Vanormer	Cambria	1	8	1	. . .	1	. . .	11	. . .	. . .	. . .	. . .	1	3	3	14
West Eureka No. 1	Jefferson	1	150	15	8	16	6	196	. . .	1	2	40	8	1	52	248
West Eureka No. 2	Jefferson	1	280	25	10	40	15	371	. . .	4	3	35	15	1	58	429

TABLE III—*Continued.*

NAMES OF COLLIERIES.	Location.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand totals—inside and outside.
		Inside foreman or mine-boss.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Doorboys and helpers.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Coke drawers.	All company men.	Superintendents, bookkeepers and clerks.	Total outside.	
West Eureka No. 4	Jefferson,	1	133	8	10	4	3	158	....	1	3	....	10	1	15	173
West Eureka No. 5	Jefferson,	1	160	20	10	12	6	208	....	2	3	....	10	1	16	225
West Eureka No. 10	Jefferson,	1	200	20	12	10	8	251	....	2	....	....	10	1	13	264
Webster	Cambria,	1	188	28	14	22	15	268	....	3	2	....	8	2	15	283
Walston No. 1	Jefferson,	1	140	10	3	20	5	179	2	2	2	70	4	1	81	260
Walston No. 2	Jefferson,	1	140	10	7	20	5	183	2	2	3	70	5	1	83	266
Walston No. 3	Jefferson,	1	150	10	15	17	5	198	2	5	3	73	3	1	87	285
Totals	....	93	7,779	1,609	349	665	254	9,577	47	147	128	1,120	404	117	1,952	11,560

TABLE IV—*List of Fatal Accidents occurring in and about the Mines of the Sixth Bituminous Mine District for the year ending December 31, 1891.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	Number of orphans.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
Mar. 30.	Frank Probul,	Miner,	30	M.	1	Webster No. 3,	Cambria,	After firing a shot in the coal, which did not bring it down, he went to undermine more, and neglected to sprag the coal, the result was that it fell upon his body and legs, crushing him so badly that he died the next day.
April 9.	W. P. Heverly,		47	M.	4	Tipton,	Blair,	Was instantly killed by a fall of coal.
April 16.	David Nicol,	Driver,	16	S.	..	Adrian No. 1,	Jefferson,	Was riding on the first car of his trip from which he fell, and the remainder of the trip passed over him crushing his leg very badly; he died from the injury the next day.
April 28.	Joseph When,	Miner,	24	S.	..	Gallitzin shaft,	Cambria,	Was crushed by a fall of coal; he undertook to undermine a piece of coal which had a loose end and he put no sprag under it; he died in Altoona Hospital on May 1st.
May 5.	Nelce Pearson,	Miner,	28	S.	.	Sterling No. 9,		Killed by a fall of top slate which came down on him for want of more propping.
June 2.	Steve Kecinick,	Miner,	34	M.	4	Adrian No. 2,		After firing a shot in the coal, he went back before the smoke cleared away and began prying down some coal when a piece fell upon him, crushing him internally; it was not thought to be a serious hurt, but it proved fatal in four days afterwards.
June 30.	Henry Waltz,	Miner,	25	S.	..	Webster No. 3,	Cambria,	He was undermining coal without any sprags, and it gave way and killed him instantly.
Sept. 12.	Joe Suinyslo,	Miner,	25	M.	2	Adrian No. 2,	Jefferson,	While in the act of setting a prop to keep a stone from falling, it came down upon him and crushed him to death.
Oct. 26.	Joseph Pelser,	Miner,	32	M.	2	Webster No. 3,	Cambria,	Was killed by a fall of coal while undermining, had no sprag under where one should have been.
Nov. 5.	William Logan,	Miner,	49	M.	10	West Eureka No. 2,	Jefferson,	Killed instantly by a fall of coal while undermining after a shot and no sprag under it.
Nov. 5.	Andrew Koolcough,	Miner,	25	M.	..	Gallitzin shaft,	Cambria,	Was barring down some coal which held a piece of rock, and when the coal came down, the rock also fell crushing him to death.
Nov. 14.	James Batley,	Miner,	18	S.	..	Sonman No. 1,	Cambria,	This boy was killed while holding a light for his partner to knock out a prop, that held a piece of rock, which fell and killed him.
Dec. 9.	Labrator Gartoa,	Miner,	28	S.	..	Adrian No. 1,	Jefferson,	This man with three others were sitting in a group, and he was filling a cartridge with powder when a spark from his lamp fell into a keg of powder which exploded causing his death and injuring three others.

29-12-91.

TABLE V—*List of Non-Fatal Accidents occurring in and about the Mines of the Sixth Bituminous Mine District, for the year ending December 31, 1891.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
Jan. 24.	Barnardo Gurto.	Miner.	45	Yes.	Milwood shaft.	Westmoreland.	Back injured by a fall of slate.
29.	Peter Mambuca.	Door keeper.	13	...	West Eureka No. 5.	Jefferson.	Fell between cars; was neglecting his own work to ride on the cars.
Feb 10.	Robert Robb.	Miner.	38	...	Milwood shaft.	Westmoreland.	Back and ankle slightly injured by a fall of rock.
26.	John Davis.	do.	60	Yes.	Monastery slope.	.....	Was drawing a rib of coal when a rock gave way, knocking a post out, sending it against his side, injuring his ribs.
27.	Thomas McGovern.	do.	28	No.	Cushon.	Cambria.	Was riding on a trip of cars when one of them got off the track and turned on its side, catching him between the car and a rock, causing the injury.
28.	William Bowman.	Laborer.	26	No.	Gorman shaft.	do.	The sheave wheel on the head gear of shaft broke and let the rope swing, which knocked a piece of timber from the frame work and struck Bowman on the head and gave him a severe contusion.
Mar. 11.	John. C. Brown.	Driver.	17	No.	Adrian No. 1.	Jefferson.	Fell in front of cars, breaking his leg.
14.	Stoheno Narcheiro.	Miner.	38	Yes.	Gorman shaft.	Cambria.	Was caught by some draw slate which he failed to draw down and did not put any props under it; so when the coal was taken out from under it the fall came.
Apr. 4.	John Mahoney.	do.	20	No.	Cushon.	do.	Was drawing back a pillar and for safety was taking down the bony coal, or draw slate, and left a small piece up and went to undermine, and a piece fell on his leg, breaking it between the ankle and knee.
May 27.	George Munkley.	Driver.	30	Yes.	Mitchell.	do.	Leg broken by being caught between cars.
June 9.	Joseph Mutchenbaugh.	do.	26	...	Webster No. 2.	.....	Leg broken by being caught between two loaded mine cars.
July 2.	William Watkins.	Dumper.	35	Yes.	West Eureka No. 5.	Jefferson.	Was caught between two bank cars and badly squeezed and injured internally.
17.	John Knutz.	Miner.	38	Yes.	Webster No. 3.	Cambria.	Ribs broken by a fall of coal.
22.	Michael Lague.	do.	31	Yes.	Eleanora.	Jefferson.	Slightly injured by a fall of coal in neglecting to use sprags.
Aug. 25.	Joseph Ditko.	do.	43	Yes.	Mitchell.	Cambria.	Leg fractured by a fall of coal caused by his own carelessness. After firing his tight shot he commenced undermining the remainder of his coal without standing a sprag under it.
Sept. 30.	Elmer Wilson.	Driver.	20	No.	Loyalhanna shaft.	Westmoreland.	He was caught between the car and the rib in coming out of room and his arm was broken.
Nov. 17.	Jesse Rose.	do.	18	No.	Rolling Mill mine.	Cambria.	His thigh was broken by riding out between the cars when it was against orders to ride.
Dec. 9.	Anthony Gastoadead.	Miners.	...	...	Adrian No. 1.	Jefferson.	These three men were burned by the explosion of a keg of powder which was ignited from a spark from one of their lamps.
9.	Rosa Gartoa.						
9.	Peter Spenett.						

SEVENTH BITUMINOUS DISTRICT.

(ALLEGHENY, WASHINGTON AND WESTMORELAND COUNTIES.)

Office of the Inspector of Mines,
Idlewood, Allegheny County, *March 11, 1892.*

Hon. Thomas J. Stewart, *Secretary of Internal Affairs:*

Sir: I have the honor of presenting herewith my annual report for the year ending December 31, 1891. The total production of coal shows an increase of 275,849 tons over that of the year 1890, notwithstanding the fact that there was a general suspension of mining operations lasting over one month, which occurred during the busy season, and was the result of a dispute between the operators and miners about the price to be paid for mining. The number of persons killed in and about the mines during the year was 17, and 49 received non-fatal injuries. My investigations into the cause of the fatalities went to show that four persons who were not practical miners lost their lives because they were not competent to recognize their danger, or to use proper safeguards for their own protection, and five or six others lost their lives through their own neglect. Eleven of the fatalities were caused by falls of slate and roof; four by mine cars; one from being crushed in a shaft, and one by being burned in the mine with crude petroleum oil. A very large number of the non-fatal accidents occurring from falls of roof and coal, were due to the same causes as mentioned above, namely, ignorance of the danger or of the methods to be adopted to avert it, and through carelessness on the part of those who have the requisite knowledge to detect and guard against danger but fail to do so. The sanitary condition of the mines in this district will in all probability compare very favorably with those of other parts of the bituminous region; but, as a whole, we have not by any means arrived at the goal of perfection in this respect, and while we recognize and heartily commend the spirit of advancement manifested, and the prompt attention given to matters pertaining to the health and safety of their employes by a majority of our mine operators, we must not forget to mention the fact that we are also obligated to inspect quite a number of mines to which the above commendation is not

applicable, but instead of which, all sanitary requirements and the expenses connected therewith, seem to be regarded and treated as being a useless and unprofitable investment; and almost invariably when we visit these mines we find all the doors propped open and very little fire in the furnaces, and the road beds buried beneath mud and water. It is not possible at all times to keep some of our mines dry, but it is possible and eminently practicable to employ attendants to open and close the doors and to attend to the ventilating apparatus, so as to propel a sufficient volume of air through the workings to keep the mines in a healthy condition, and money and time spent in so doing would be well spent, the opinion which seems to be entertained in some quarters to the contrary notwithstanding. This fact was recognized and provided for by a large majority of the members of the commission appointed last year to revise the present mining laws, but this, with several other necessary humane provisions recommended by two-thirds of the said commission, did not meet the approval of those of our honorable legislators elected to the higher branch of our legislative body, probably *that* distinguished body of public servants, or those of them who held the matter under advisement, considered that such a humane measure was too valuable to become common property, which is the reason why they so carefully clothed it with the veil of obscurity. We regret to say that the harmonious relations which had existed between the operators and miners for a number of years were not maintained during the past year, there being, as before stated, a cessation of mining operations lasting a little more than one month, caused by a dispute about the price of mining. Such disputes are deplorable for several reasons, they invariably bear heavily upon the miners and their families, for a month's wages lost during the busy part of the season is hardly ever recovered, and business is disarranged by the stoppage to such an extent, that short time and light production is the rule for a considerable time after the resumption of operations, which is caused by a part of the trade being withdrawn to other districts, and perhaps the worst evil of all is, that during such disputes, efforts are sometimes successfully made to obtain other labor to take the places of the regular workmen, so that when the old workmen are ready to resume work they find their places filled by others, and as a rule a large percentage of the strangers who are attracted to the mines during these periods, are by no means the most desirable class of people to associate with, and are of value to the community only so far as a pecuniary profit may be derived from their labor, they having no sympathy whatever with American institutions, not being attracted hither with a view of becoming part and parcel among us, but with the intention of making a few hundred dollars to carry them back to their native country, existing while here in a state of filth and squalor repugnant to free American citizenship, and among whom a citizen with the welfare of his family at heart will not reside. We would venture to express a hope that the time may

not be far distant when conflicts between capital and labor in the coal trade will become things of the past, and when each will regard their interests as being mutual and be actuated by a spirit of equity and fairness towards each other, and when our coal will be mined by American citizens and those who come to our country with the avowed intention of making for themselves a permanent home and accepting the responsibilities of citizenship.

In my report for the year 1889, I called attention to the matter of oil and gas wells being drilled through the coal measures of western Pennsylvania, and the danger likely to arise therefrom, unless the proper safeguards are provided by the legislature. At this time I deem it proper to mention the subject more in detail, but with no desire or intention to antagonize the oil or gas business or to place any burden upon it beyond what is absolutely necessary for the preservation of our coal fields for future use, after the oil and gas industry has ceased to exist. Up to the present time a very considerable acreage of the coal bearing strata of this region has been penetrated by the drill which is still under busy headway and likely to continue so for some time to come in search of those necessary and valuable commodities, oil and gas. While the wells are drilled through the solid coal at a reasonable distance from where mining operations are in progress, there is no immediate danger, but where a large number of wells are drilled through the worked out parts of the mines and through the entry and room pillars, also through the working chambers where the men are at work, and where the oil penetrates through the solid coal and through the broken strata in copious quantities into the mine, covering the floor several inches deep for a considerable distance in some of the entries and rooms, and where the men have to breathe an atmosphere impregnated with the foul odor of crude petroleum, under these conditions we consider that the danger is rather too near at hand for the benefit of our permanent health and safety. Such conditions as above described exist in this section at the present time, and there appears to be no legal remedy; at any rate we have failed to obtain any so far. As before stated, thousands of acres of coal territory in this region are perforated by the drill in search of oil and gas. A great number of the wells are already abandoned as being no longer of any commercial value to the owners, and the number of such abandoned wells is continually being augmented, but while the wells are no longer of value, it does not follow that all the gas is extracted from the oil and gas-bearing rock, the fact is that there may be a considerable quantity of gas in the rock but not sufficient pressure to propel the fluid through the mains to the point of consumption, and I believe that most if not all the gas wells are abandoned in this condition, and most of the oil wells also discharge large volumes of gas. Now we understand that there is no official record kept of the number or location of those abandoned wells, the only legal stipulation is, that they be plugged, after

which the casing is withdrawn, and the upper section of said wells will invariably become filled for some distance with sediment from the surface, beneath which the well, will be full of gas held under pressure, for if the plugs be properly placed, the gas will certainly find its way above them through the crevices in the strata. Now, if this state of things is to continue without legislative interference, what will be the result hereafter, when the wells and their locations are forgotten, and when this coal property is needed for actual development? Will any person with a practical knowledge of coal mining assert that shafts can be sunk and the coal extracted where those old oil and gas wells are located without a constant repetition of dire calamities, involving appalling destruction of human life every time the miner's pick would penetrate one of those old drill holes? So much so that mining in such locations would be rendered impossible, of course, some of the people engaged in the oil and gas business will try to ridicule this comment, but we have a right to our opinion and think it can be substantiated. At any rate we argue in favor of economy and safety in the future (perhaps when we are no more), and we would mention the fact that the Hill Farm disaster, where 31 lives were lost, was the result of a miner striking his pick into a drill hole and liberating water and gas therefrom, and this drill hole was only drilled from the surface to the coal bed a little over five hundred feet, had it been down to the oil and gas rock, the danger would have been an hundred fold greater. If our surmises are well founded, and we believe them to be so: the question naturally arises what, if any, precautions can be taken to preserve the wealth contained in our coal beds for future use, and to prevent such calamities as above mentioned? In answer to this we are of the opinion that effective safeguards can be applied if undertaken promptly, and we would offer the following suggestions for consideration, namely, that all wells when abandoned be securely plugged immediately above the oil or gas-bearing rock, after which they be filled up to a point above the upper coal bed with a suitable grade of cement which will harden and become solid under water, this cement being lowered into the well in a partial liquid state would likely penetrate and close any crevices in the strata in connection with the well, and would effectually resist the pressure of gas from below and prevent its escape into the upper or coal-bearing strata. In filling the upper part of the wells from the base of the lower productive coal measures, fine broken stone could be mixed with the cement which would lessen the cost, as this part of the filling would only be required to close up the hole so as to leave no space for an accumulation of gas or water to lodge in: this being done, I think the danger would be averted and the coal would be preserved for future requirements, and could be mined without the apprehension of disaster every time a well was encountered. As an additional precaution, every drill-hole should be correctly located on maps to be preserved in the county buildings or some other suitable place for

future reference. The number of wells and a description of their location could also be noted on the deeds of all properties through which they are drilled. The law should delegate to some responsible party or parties the duty of supervising the work to see that it was properly done. If the above or some other effective safeguards are not adopted, then in all probability the destruction of human life and the loss of a valuable commodity in after years, will be charged on the pages of future history to the wilful neglect of the present age. The cost of filling up a well for a distance of 2,000′ in the manner above suggested would probably be approximate to three hundred dollars, which should be a tax on the oil and gas business, levied either upon the producers or upon the property owners deriving profits from the business. As to who should bear the cost in cases where the wells are already abandoned and the property having since changed hands is a matter for consideration, but such wells should certainly receive proper attention even if the state or county should bear the expense (the above estimate is above the average, as very few of the wells would require filling to a depth of 2,000′). It may be argued that this expense in some locations where there are a number of wells would exceed the money value of all the coal underlying such property, but when we consider that coal is the main stay of our commercial prosperity, we can readily discern that its money value as it lies in the earth is only a small factor of its actual value, as related to the prosperity and stability of a great enterprising people, and such an argument should have no weight against such an important matter. We do not know the actual quantity of coal contained in the coal fields in this part of the state, we have a pretty accurate knowledge of the extent of the coal beds in the upper measures, but the quantity of workable coal contained in the lower productive measures is not well defined. We do know that what is known as the Freeport bed which lies about 660′ more or less below the Pittsburg coal, extends all through this section of the county, but what is below *that* we know very little about, but likely other workable beds will be found below this one, at least in some locations if not uniformly. But this much we do know, that whatever be the extent of our coal fields they are worth preserving for the benefit of mankind in future ages. With this report I give a general description of the sanitary condition of all the mines in this district, together with the usual statistical tables. All of which is respectfully submitted.

Yours respectfully,

JAMES BLICK.

Total production of coal in tons of 2,000 pounds,	4,848,174
Total production in tons of coke,	10,392
Number of mines in district,	73
Number of persons employed inside,	8,437
Number of persons employed outside,	763
Total number of persons employed,	9,200
Number of persons killed in and about the mines,	17
Number of non-fatal injuries,	49
Number of wives made widows by above fatalities,	10
Number of orphans from same cause,	22
Number of tons of coal produced per life lost,	285,186+
Number of persons employed per life lost,	541+
Number of tons of coal produced per person injured,	98,942+
Number of persons employed per non-fatal injury,	187+
Number of horses and mules employed,	598
Number of steam boilers in use,	112

DESCRIPTION AND GENERAL CONDITION OF MINES AND OF IMPROVEMENTS MADE DURING THE PAST YEAR.

Mines on the Monongahela and Youghiogheny Rivers.

Castle Shannon Mine.—They are opening into a new field of coal. Some of the entries I found to be driven upwards of 350′ in advance of the air current, which is the system formerly practiced at this mine when opening up new territory, but as no entries have been driven since my term of office began, until this year, I have had no previous cause of complaint in regard to this matter. I have advised them to open up the new territory on the double-entry system, so as to be able to ventilate systematically, but am not sure that my advice will be acted upon. At present the ventilation is below the requirements during the summer season, and it is necessary that artificial appliances be provided forthwith. Quantity of air in circulation, 9,500′.

Ormsby Mine.—At the time of my last visit the ventilation was defective. They are now enlarging the mine with the view of employing more men than for several years past, consequently they will need better ventilation. It is the intention to sink a new air shaft and erect a fan as soon as the proper location can be reached. They ventilate at present with the boiler fires at the bottom of the shaft, assisted by the exhaust steam from the pumps. At the inlets there is about 20,000′ of air passing into the mine, but only about 10,000′ passing where the men are working. I advised that a temporary furnace be built to assist the ventilation until the new shaft can be sunk, which they have promised to do.

Beck's Run and Hays Street Run Nos. 2 and 3 Mines.—The condition of these mines is favorable, with a good current of air passing through the workings. When last measured there were 37,400′ of air passing in the Beck's Run mine, and 78,000′ passing in Nos. 2 and 3 mines, both of which are ventilated by the same furnace.

Walton.—They have erected a fan to produce ventilation in the workings west of the main tunnel. The coal east of the tunnel is all worked out with the exception of a few room pillars and the entry stumps. At the time of my last visit I found that some of the main doors used for guiding the air in the proper direction were left standing open much of the time, which was a hindrance to the proper distribution of the air current. When the doors are kept closed and the current propelled through the proper air-ways, all parts of the mine are well ventilated. The roadways are also kept well drained and in good condition. Quantity of air passing at the fan, 45,000 feet per minute.

First Pool, M. G. C. Co.—I also observed that some of the doors in this mine were left open by the drivers much longer than necessary, which is a detriment to the effective ventilation of the workings. When properly attended to all parts of the mine receive an ample supply of pure air. The drainage is good. Quantity of air in circulation, 29,000 feet per minute.

Streets Run.—This mine has resumed operations after a shut down of eighteen months. At present only about fifty men are employed. The mine is in good order in all respects.

Bellwood.—All parts of this mine are well drained, and the ventilation is good. The air current is well distributed in three sections or splits. Quantity of air passing at the outlet when last measured, 44,800 feet per minute.

Boston Nos. 1 and 2.—The general condition of these mines is satisfactory. On one of my visits to No. 2 mine I unexpectedly came in contact with a large body of explosive gas which had been allowed to accumulate by the carelessness of the inside mine officials who were not aware of its presence until I discovered it. I reprimanded them for their lack of attention to duty and cautioned them to be more careful in future. There is no excuse whatever for the mine-bosses or fire-bosses employed by this company to run any risk as regards the health and safety of the men intrusted to their care, as all necessary material is at their command, and they are strictly enjoined by the company to give prompt attention to all matters pertaining to the health and safety of the men and the security of the mines. Quantity of air produced by No. 1 furnace, 34,500 feet per minute, and 42,500 by No. 2 furnace. One division of No. 1 mine is ventilated by No. 2 furnace, as the power of the furnace in No. 1 during the summer season is hardly equal to the requirements.

Dravo is not in the best condition, the ventilation when last visited

was reasonable, but the return airway leading to the furnace was in bad condition. Quantity of air passing into the mine, 9,000 feet per minute.

Mines No. 2, 4, 5, Southwest and Pacific.—Operated by the Youghiogheny River Coal Company are in reasonably good order. The quantity of air passing in each mine when last measured was, for No. 2, 45,680 feet; No. 5, 35,000 feet; Pacific, 20,000 feet; No. 4 and Southwest, 45,000 feet per minute. These are all large mines. The ventilation is produced by four furnaces, but on account of the large area of territory in operation and worked out, the furnaces will soon be found inadequate to produce the required air current; in fact, during the summer season the want of more air in all the mines, except No. 5, is already being felt, especially in the Pacific, which needs a more powerful ventilator at once. No. 5 is well supplied with ventilating power for years to come.

West Newton No. 2.—This mine is in good condition, all parts of mine are well supplied with fresh air. Quantity, 34,080 feet per minute.

Port Royal No. 2.—The general condition of this mine is favorable. Total volume of air passing into the mine when last measured was 94,800 feet per minute, a good supply being distributed to the face of the workings. A large quantity of explosive gas is generated in this mine which necessitates at all times a sweeping air current to keep the workings in a safe, healthy condition. It also requires constant and unceasing vigilance on the part of the mine officials to prevent accumulations of gas from which accidents may result.

Darr.—This is a new operation opened the latter end of 1890. It was, when last visited, in pretty good order, with a volume of 12,500 feet of air passing per minute.

Mines on the Little Saw Mill Run Railroad.

Enterprise.—They are at present erecting a 25′ diameter fan which will be ready for operation about May. During the past year the quantity of air has decreased below that of former years, but when the new fan is put in operation there will be an abundance of air for all purposes, with plenty of reserve power in case of necessity. The fan is strongly built and is being substantially erected on top of a large shaft sunk especially for that purpose, and will take its air from inlet shafts sunk at the face of the mine. The return airways have been enlarged for a long distance and in a short time this will be the best equipped mine for ventilation in the district. Quantity of air in circulation when last measured, 37,220 feet per minute.

Venture.—The ventilation in this mine is below the requirements; they have more than 100 cubic feet of air for each person employed, but there is, in my opinion, urgent necessity for a much greater volume than

can be obtained under present arrangements. They have at present a volume of 19,000 feet per minute, produced by a 16′ diameter fan. They have long ago promised to provide a larger fan or to move the one they have to a more suitable location, and they will probably do so in the near future.

Fox.—This mine when last visited was found in a very unsatisfactory condition; a number of men were working in advance of the air current. They make very little attempt to drive airways, but ventilate the entries with canvas doors placed on the room necks, consequently the entry men get no pure air to breathe while at their work, and the room men get but a very scant supply; in fact, it is an impossibility to ventilate a mine properly with this makeshift system, unless there is a ventilating apparatus capable of producing an unlimited amount of air, which is not the case at this mine, as the ventilator is about on a par with the system of distribution. Quantity of air passing, when last measured, 8,000 feet per minute, but very little of it could be found at the face of the mine where most required.

Mines on the Pan Handle Railroad.

Idlewood is not in good condition; at every visit I have made to the mine during the past year I have found the doors propped open and the ventilation, or most of it, passing direct from the inlets to the furnace. The working parts of the mine and the men working therein, according to my observation, receive but a very scant supply of pure air. The furnace fire is also neglected, in fact, the mine-boss through his ever-abiding want of attention, seems to allow everything pertaining to the ventilation to take care of itself. When we complain to them about their neglect, we, of course, receive the same old-time excuse, namely, that the Inspector always comes just at the time everything is out of place; but the fact is, if they are careless and neglectful, things are always out of order, and if they don't know it, it is because they don't attend to their legal duties. The drainage is also in very poor shape, the roadways being very wet and muddy, but on account of the number of local swamps met with and the quantity of water to handle, it is rather difficult at certain times to keep the mine dry, but with proper appliances it could be drained much better than it is. Quantity of air passing in the return airway when last measured, 15,480′ per minute, which was sufficient if constantly maintained and properly distributed.

Grant.—At the time of my last visit the ventilation in some parts of the mine was defective which was caused by the break-throughs in the entry pillars not being closed, and for want of doors in one or two locations, to conduct the air forward to face of mine. The reason of this defect, as I found upon inquiry, was that lumber to build doors and stoppings was not on hand, but when a supply of necessary material required

to secure the health and safety of the men is not on hand, our mine bosses should carry out their legal duties and stop all workings in the parts of the mine affected, until the supplies are forthcoming, regardless of the consequences, rather than run any risk to the health and safety of the men under their care. They should also be prompt in sending in their orders for supplies beforehand, so as to have them on the ground when required. The drainage is not of the best, some of the roadways being wet and muddy. Quantity of air passing at the outlet 20,000 feet per minute.

Fort Pitt.—General condition is favorable. Quantity of air in circulation 16,000 feet per minute.

Cherry was in pretty good order at the time of my last visit, except a few rooms being turned away in advance of the air current. Quantity of air passing, 14,000 feet per minute. Drainage in fair condition.

Nickle Plate.—This mine is directly on the oil belt and is perforated in all directions with oil wells; a number of wells being bored through the old worked out parts of the mine. Several are bored through the working places and a large number are drilled through the room and entry pillars. In two or three places the oil is penetrating through the strata into the mine in copious quantities, causing a foul, disagreeable smell. The cover above the coal is light, and the surface strata is saturated with waste oil, and whether the oil found leaking through the coal into the mine is this waste oil from the surface, or whether it comes directly from some of the wells beneath the surface is not known, but certain it is that it is there and is an element of danger to the men working in the mine. For some time past I have considered the mine unsafe and am still of the same opinion, and I called in several of the other Inspectors, who, after an examination of the mine and the location of the wells, all coincided with my views that the mine could not be considered in a safe condition, consequently we made application to court for an injunction to restrain operations, but we did not satisfy the court that there was immediate danger, so the injunction was not granted, but the application was left open for future proceedings if found necessary. Several of the Inspectors have examined the mine since that time and came to the conclusion that there was nothing new in its condition that would prove to the court that there was immediate danger to the health and safety of the persons employed. Of course while the danger is imminent, it is not so easy to prove that it is immediate: if the danger becomes immediate, it will probably be caused by a sudden in-rush of gas or oil from the breaking of the overlying strata in the vicinity of some of the wells, and this coming in contact with the lights used in the mine will cause *immediate danger* and immediate loss of life at the same time, as the burning oil would be just as disastrous as a gas explosion and would render the escape of the men impossible. Any one who has seen crude oil burning on the surface can form an idea of what its effects would be underground. Several other mines in this vicinity are affected in the same way, but

not to the same extent, however they bid fair to become so in the near future. What the upshot of all this is going to be is unknown at present, but I am fearful of the consequences that may result before the danger will be legally recognized. Quantity of air at the outlet, 44,000 feet per minute, fairly distributed. The Brier Hill mine operated under the same management is in pretty good order. They have sunk a shaft at the face of the mine for drainage and ventilation, and a large number of pillars which have been standing for some time for lack of facilities for removing the water will now be taken out. There are several oil wells bored through this mine. Quantity of air in circulation when last measured, 35,500 feet per minute.

Mansfield and Erie.—Is in fair condition as regards ventilation, but the drainage is not very good. Only about thirty men are employed. Quantity of air, 7,500 feet per minute.

Boyd.—Is also in pretty good condition, all parts of the mine are reasonably well ventilated. Quantity of air in circulation, 14,000 feet per minute.

Oak Ridge.—At the time of my last visit the return airway was obstructed by water, causing nearly a complete stoppage of the air current, but I have since been informed that the obstruction is removed and the ventilation much improved.

National was, when last visited, in reasonable order. Quantity of air at the inlet when last measured was 10,000 feet per minute, and 5,000 feet at the face of the main entries, this quantity will need to be increased in the very near future.

Star.—Is not in very good condition, the ventilation when last visited was below the requirements, but they were making provision to improve it by driving an airway to connect with the small furnace in the old mine, near to where they are working. Quantity of air in circulation, 7,600 feet per minute.

Willow Grove.—When last visited the ventilation at the face of one or two of the entries was slack, in other respects the conditions were favorable. Quantity of air passing in return airway, 32,500 feet per minute. The Champion mine operated under the same management is a new opening and its prospects are favorable, excepting that there are a great number of oil wells to interfere with the work and it will require skilful work to keep clear of them all.

Laurel Hill No. 1.—The roadways as usual are wet and muddy, but the ventilation when last visited was in reasonably good shape. Quantity of air in circulation, 48,725 feet, but as there is plenty of reserve power in the fan, this quantity can be increased at any time when necessary.

Jumbo Nos. 1 and 2.—I understand that a larger fan is to be placed at the No. 1 mine and the fan in use at the present time taken to No. 2. No. 1 is a large mine and needs a large volume of air to keep the work-

ings in a healthy condition. No. 2 is also in need of better ventilating facilities. The above improvements will be made as soon as arrangements can be carried out. Quantity of air passing when last measured in No. 1, 46,500 feet per minute, and 18,000 feet per minute in No. 2.

Black Diamond.—At the time of my last visit there were only a few men employed taking out pillars. Air in circulation, 4,000 feet per minute.

Mines on the Chartiers Valley Railroad.

Mansfield No. 2.—The air current in same parts of this mine is heavily charged with black damp. They are driving a new airway at the face of the mine to connect with the face of the main tunnel, which will increase the area and shorten the distance which the air has to travel. This has been in progress for several months and will not be completed for several months to come. It is also the intention to sink an inlet air shaft at the face of the workings, and the ventilation will not be in a satisfactory condition until the above improvements are completed. As stated in former reports the general manager who had charge of this mine for several years previous to the present management, is responsible for its present condition. Oftentimes we find persons in general charge of large mining properties who are ignorant of the first principles of ventilation or of the science of mining in any particular, but they almost invariably leave to their successors a legacy which will take years to overcome, and something akin to this state of things has occurred at this mine. Quantity of air in circulation in the working parts of the mine 27,000 feet per minute.

Nixon.—Was in good order when last visited. Quantity of air passing through the workings, 38,000 feet per minute.

Leasdale is simply a hole in the ground without any system. There is sufficient air at the outlets but no proper airways preserved to conduct it to the face of the workings where it is most needed. The coal at this place is nearly all mined out and will only last a short time.

Summer Hill.—They have erected a small fan at this mine during the past year and the ventilation is now fully up to the requirements, but the fan is of limited capacity with very little reserve power. The condition of the mine at the present time is favorable, with a volume of 28,500 feet of air passing through the workings.

Bower Hill.—The general condition of this mine when last visited was satisfactory. Volume of air passing per minute, 30,000 feet.

Bridgeville and Old Bower Hill Mines.—The ventilation in the dip side of the Bridgeville mine was not very well distributed, other parts of mine are in pretty good order. Air passing through the workings, 17,200 feet per minute. The old Bower Hill mine is nearly worked out, but was in reasonable condition when last visited.

Hastings Slope.—On my first visit the ventilation was very defective

there being very little air passing through the entry where most of the men were working. On my last visit there was a great improvement, but there were still two or three places working too far in advance of the air current. Quantity of air passing into the mine, 9,600 feet per minute.

Boon.—General condition is favorable. They have put a large quantity of cribbing and new timbers in the pit mouth, and for a considerable distance along the main entry, which has very much improved the main hauling-way both as regards convenience and safety. Quantity of air in circulation when last measured, 25,000 feet per minute.

Allison.—This mine is now operated by J. V. H. Cook & Son. On my first visit the ventilation in one part of the mine was very defective. A number of men were turning rooms in advance of the air current; the atmosphere being foul and injurious to health. This was not the first time that I have had reason to complain to this company in regard to the pernicious system of having a number of men at work turning rooms where there was no air current in motion, but it seems to be an old habit hard to be given up. On my last visit matters were much improved, but the ventilation was not distributed as well as it might have been. Quantity of air at the outlet, 10,500 feet per minute.

Enterprise No. 2.—In the first part of the year this mine was in very bad condition, but it has since changed hands and the new company has provided a fan and commenced to work the mine on a proper system. They have also sunk a shaft for a traveling way, together with several other necessary improvements, costing a considerable amount of money. Previous to the change in ownership the mine was without ventilation, unhealthy and unfit for men to work in, but it was not often that a sufficient number of men were employed to bring it under the provisions of the law. The mine at the present time is in a favorable condition and will likely become a reasonably large operation in the near future. Quantity of air in circulation when last measured, 14,500 feet per minute.

Mines on the P., C. & Y. R. R.

Essen.—The ventilation in this mine is now below the requirements. It needs a larger fan, which the company has promised to provide in the near future. Quantity of air at the inlets, 21,300 feet per minute, but a large quantity of this is leaking into the return airway and is of very little benefit to the men.

Beadling.—Is in reasonable order, but they have a habit of sometimes turning rooms from the entries in advance of the air current. The entries and working places being driven in the solid coal, generate considerable quantities of explosive gas and requires close attention on the part of the mine officials to prevent accidents. Quantity of air passing out at the furnace when last measured, 35,000 feet per minute, which were reasonably well distributed to the workings.

O. I. C.—Was in bad condition when last visited, the ventilation being far below the requirements. There was no map of the workings provided and no legal mine-boss employed, but I am informed that they have since had a complete survey made and are now sinking a shaft for a new furnace, which will be ready in a short time. They have also employed a legal mine-boss. Air in circulation, about 5,000 feet per minute.

Powers.—Is in pretty good order. Quantity of air at the outlet when last measured, 40,400 feet per minute, but a considerable quantity of this is lost by leakage and does not pass to the face of the mine. At the time of my last visit all parts of the mine were reasonably well ventilated.

Federal Spring.—The ventilation at face of workings not very brisk. Average quantity of air at face of entries, 4,000 feet, and 12,000 feet per minute at the outlet when last measured, but the mine was not working steadily at that time and only a few miners were working. The furnace, when fired properly, will produce from 18,000 to 20,000 feet per minute.

Beachmount.—Is in bad condition. The roadways are wet and muddy. The doors which should be used to guide the air current to the working places are not kept in good repair and are left open most of the time, in fact there is very little evidence of skill or sound judgment being used either inside or outside of this mine. Quantity of air at the outlet when last measured, 25,200 feet per minute. This quantity is sufficient if properly distributed to the workings, which I have reason to believe is not done. Of course it is the old story we get when we make our complaints, namely, that we always visit the mines when things are a little out of place.

Federal.—On my last visit the room pillars were not cut through as often as required, and some of the entries were driven too far in advance of the air current. Quantity of air in circulation, 30,000 feet per minute.

Mines on the Montour's Run and Moon Run Railroad.

Beach Cliff and Montour Mines.—These mines when last visited were in favorable condition. Quantity of air in circulation in the Cliff mine 25,000 cubic feet per minute, and 56,550 feet per minute in the Montour mine. Both mines generate large quantities of black damp and require a brisk air current to maintain a healthful atmosphere in the roadways and working places; in fact it is difficult at some periods during the summer season to keep the Montour mine free of this noxious gas, notwithstanding the large volume of air in circulation.

Moon Run.—This is a new operation, opened during the past year on the Moon Run railroad, a branch about five miles in length, connecting with the Lake Erie railroad, a short distance below Chartiers. The outside equipments at this mine are first class and present indications point to a large production in the near future. The mine is located in the

center of a large and valuable coal property, and the inside operations are already developed sufficiently to employ upward of two hundred miners.

Mines on the Millers Run Railroad.

Ressing.—This mine was formely known as Laurel Hill No. 2. The ventilation is below the requirements, a large fan is needed, which the operator has promised to provide in the very near future. Quantity of air in circulation when last measured 26,000 feet per minute. This is considerably over 100 feet per minute for each person employed, but as a considerable quantity of powder is used to blast the coal down, together with the fact that explosive gas is generated, necessitates a very brisk air-current to keep the workings in a safe healthy condition.

Ridgeway Valley.—This is a new opening and is destined to become a large operation; they have already sunk a shaft to the coal bed and commenced to drive entries, they are also driving a slope for a main hoisting way, but will not be ready to produce much coal for several months to come.

Mines West of the Allegheny River.

Pine Creek.—When last visited there were 30,500 feet of air per minute passing into the mine, but it was not very well distributed to the face of the mine, I requested the mine-boss to erect more stoppings and to repair the old ones so as to cause a better circulation of the air-current at the face of the entries. I have since been informed by him that the matter has received his attention and that all parts of the mine are now well ventilated.

Glenshaw.—Number of person employed in the mine is only 23. Quantity of air passing at the outlet 6,200 feet per minute, about one-half of this amount is passing the face of the mine.

Hites.—In the early part of the year the ventilation at the face of the mine was not properly attended to, the doors being left standing open, allowing the air to go direct to the furnace instead of passing through the working places, but on my last visit, matters were found to be much improved and the air-current reasonably well distributed to the face of the mine. Quantity of air in circulation 13,500 feet per minute.

Breckinridge.—This is a new mine employing at the present time about 20 miners, and was in fairly good order when last visited. Quantity of air passing 10,000 feet per minute, produced by a small furnace. The product is being used to coal the railroad engines, but the tipple is arranged for shipping purposes.

Natrona.—Some of the entries and a few rooms were found to be working too far in advance of the air current, in all other respects the mine was in good order at the time of my last visit. Quantity of air in circulation 9,000 feet per minute, but this quantity can be increased at any time if found necessary. Number of persons employed about 45.

30–12–91.

DESCRIPTION OF FATAL ACCIDENTS OCCURRING IN AND ABOUT THE MINES OF THE SEVENTH BITUMINOUS DISTRICT FOR THE YEAR 1891.

Zontan Ametica, miner, was instantly killed by fall of slate in his room. This man's working place was not properly timbered, the slate being left without support for about eight feet back from the face the whole width of the room. The danger was imminent, and if the room had been properly timbered the accident could have been prevented. The man was either grossly careless, or was not competent to recognize the danger or to protect himself therefrom. The accident occured in the Summer Hill mine, February 6.

Petro Secam, miner, was killed by fall of slate in the Beach Mount mine February 24. This poor fellow was not a practical miner, and was not competent to protect himself against the dangers often encountered in coal mining. It would appear that he had made an attempt to take down the loose slate, and failing to do so had gone under it to work, having no idea whatever of the proper methods which should be used in order to drop the slate safely, or to indicate that it was loose and dangerous.

Nicholas Reider, miner, was killed by fall of slate and roof. This man was working in a room pillar and was taking out props. The place was not properly secured with timber in the roadway back from the face of rib, from which cause the roof fell in the roadway for several feet outward, so that the man had no chance to escape. Both the mine-boss and the man himself were to blame for this neglect. Accident occured in the Ormsby mine March 19.

Mike Dominick, miner, was killed by fall of roof in Pine Creek mine on April 2. This man had fired a blast in the coal and went back to work before the smoke had cleared away, when a piece of rock which was encircled by a slip fell upon him causing instant death. The piece of roof which fell was close to the face of coal and had been loosened by the powder blast, and probably the man failed to examine the roof after the blast.

Daniel Downs, miner, was fatally injured in the Pine Creek mine by fall of roof on April 13. This man, in company with another miner, was sent to clean away a fall of roof in the roadway of one of the rooms and upon their arrival at the place where the roof had fallen. Downs went on top of the fall to make an examination of the upper roof, and he had scarcely reached the top of the fallen roof when a large piece of loose rock from above fell upon him inflicting injuries from which he died two days afterwards. The coroner's jury censured the mine-boss because he did not accompany the men to the place and make an examination of the roof for them, and instruct them how to secure it if found to be unsafe.

Soloman Gunter, miner, was killed by a fall of slate in the Jumbo mine on June 27. The deceased was blasting down and loading the coal after it was undermined by the coal cutting machine, and he had been warned of his danger by a fellow miner not more than five minutes before he was killed, to whom he said that he would either take the loose slate down or set a prop to support it, but he failed to heed the warning and act promptly and forfeited his life through his own neglect.

Patrick Mullhern, miner, was killed by fall of slate in Ocean No. 2 mine on July 10. This man was considered a very careful miner and his room in general bore evidence of care and skill, but on this occasion he was too venturesome in working under the loose slate, seeing that he had been warned of the danger shortly before the accident by a miner working near him. The same person who warned him found him under the slate shortly afterwards.

Stephen Robertson, miner, was killed by fall of slate in the Venture mine on July 18. The size of slate which fell upon him was $1.5' \times 1' \times 6'$ and three of its sides was intersected by free slips, two only of which could be seen, probably the man had not examined the slate carefully or he would have set sufficient props under it to protect himself. The accident occurred several hours before any one knew of it, and in all probability the man lived for some time after the slate fell upon him, but he was an exemplary young man, much respected, and his untimely death was much regretted by all who knew him.

Richard Hurley, mule driver, was run down and killed by loaded coal cars in the Boon mine on August 21. This man was hauling the coal from the main change parting to the pit mouth; he usually hauled a trip of twelve cars, and a short distance from the pit mouth the mule was detached from the trip, but before the mule was detached the cars were given sufficient momentum to carry them forward to the outside on a descending grade. The driver and mule passing out ahead of the moving trip, a few feet outside from the point where the mule was detached from the trip, the cross-timbers supporting the roof were rather low, being about $4\frac{1}{2}$ feet high and 5 feet wide, and from an examination of the place it would appear that the man struck his head against the low timbers and fell in front of the trip which ran over him, inflicting injuries which caused his death in a few hours. There was a space made on the side of the road at the point where the mule was detached from the cars for the driver and mule to pass into, clear of trip, but it was seldom used for that purpose, the driver preferring to run the risk of passing out in advance of the moving cars and the mine-boss allowed him to do so without restraint. I suggested that the roadway be made higher and wider so as to prevent further accidents, which has since been done, but with considerable difficulty and expense on account of the roadway being opened through old workings.

John Connell, miner, was killed at the Enterprise mine on October 8,

under the following circumstances: They had driven a new shaft from the mine to the surface and the shaft was kept full of the loose rock, with the exception of the manway used by the sinkers to go up and down to their work, and after the shaft was driven to the surface the work of clearing away the slate and rock out of the shaft was commenced at the bottom, the loose rock being allowed to slide down the shaft as fast as it was being taken away from the bottom. At the same time that this was being done the deceased with another man was working in the shaft above the loose rock, putting in timbers in readiness for the steam and water pipes and guide rods. Their instructions were to use a platform to stand upon to do their work and not to stand upon the loose rock which would be liable at any moment to slide and carry them down with it, they used the platform until they got about 30′ down the shaft when they thought it was safe to stand upon the loose *débris* to do their work, which was a fatal mistake, and they had only been working in this manner a short time when the loose dirt gave way carrying them down with it, beneath which he was completely buried. The man lived and talked to the men who were trying to release him for about thirty minutes, but he died before they could liberate him.

John Englet, mule driver, was fatally injured on October 24, in the Walton mine. The deceased with several other men were riding to their work along the dilly road in an empty car, the grade of the road being sufficient to carry the car into the mine by gravity after being pushed some distance from the mine entrance until sufficient momentum was imparted to it to carry it forward, and while running at high speed the car by some means became entangled with the wire rope used for hauling the coal from the mine to the tipple and which was supported on rollers near the roof of roadway. The car being thrown from the rails and lifted against the roof with such violence as to cause fatal injuries to the deceased, he being at the time sitting on the end of car. The other men were inside of the car and escaped injury. If the men had regarded their own safety they would not have run into the mine at such a high rate of speed. The man left a widow and six children to mourn his loss.

Nicholas Dongies, miner-boy, age 17 years, was killed by fall of slate in the Bellwood mine on October 27. The piece of slate which fell measured 8′×30″×9″. There was no prop to prevent it from falling, and it would appear from the position of the body when found that the boy knew the slate was loose and dangerous and was reaching some loose coal from under it to finish loading his car, and while doing so it fell upon him striking his head causing instant death. If the slate had been supported by props the accident would not have occurred; or it may have been that the boy did not fully recognize the danger, as he was working a room by himself.

Anton Zupatiske, miner, leaves widow in Hungary; was killed by fall

of roof in the Pine Creek mine on October 31. The weight of rock which fell upon him was about two and one-half tons; it was partly surrounded by a free slip. The danger could only be detected by sounding it with some heavy instrument, such as a crowbar or sledge The deceased had not worked long in the mine and very likely had not sounded the roof, or if he had, did not comprehend the danger.

James Sweeney, miner-boy, was fatally burned by crude petroleum oil on December 7 in the Laurel Hill No. 1 mine. The boy was pouring oil from a two-quart bottle into his lighted pit lamp, when it ignigted the oil, bursting the bottle and throwing the burning oil all over his clothing with the above results. In this section it is a common practice with the miners to gather the crude oil from the oil wells and use it in the mines for lighting purposes, and no amount of persuasion will turn them from this habit, and the wonder to me is that more accidents do not happen from the reckless use of this oil in the mines, to say nothing of the foul, unhealthy state of the mine atmosphere caused by the poisonous fumes given off. On account of his youth we deeply regret the death of this boy under such sad circumstances; we also regret that there is no provision in the mining-law under which the father could be prosecuted and severely punished for taking himself or permitting his children to take this dangerous commodity into the mine for lighting purposes, and also the managers of the mine for not preventing its use as they have it in their power to do so if they wish.

Robert Davidson, roadman, was killed by the dilly trip December 11, in the Nickle Plate mine. He was employed to oil the rollers on the dilly road and to keep the road in general repair. The accident occurred near the mine entrance. The dilly runs into two different sections of the mine, and the deceased had just stepped aside to allow the empty trip to pass him near to the point where the two roads diverge, and for some reason or neglect the switch was not placed in its proper position and the trip was pulled into the wrong entry; the dilly rider gave the signal for the trip to be pulled back over the switch in order to get to the right entry, and the deceased who was working within a few feet of the cars did not notice that the trip was being pulled towards him and he was struck and dragged some distance under the cars and injured to such an extent that he died in a few hours.

John Mojock, miner, was killed by fall of slate December 23, in the Ocean No. 2 mine. He was working with another man taking out a room pillar; he had only been working in the mines a short time and was not competent to recognize the fact that he was working under a loose and dangerous piece of slate and consequently made no effort to take it down or to set props to prevent it from falling. The danger was imminent and could not have escaped the notice of any practical miner having any regard for his own safety. His butty who had worked in the mine for some time said that he thought the slate was dangerous,

yet he made no effort to take it down or to support it with timbers or even to warn the other man of the danger. Probably he had paid no attention to it and made no effort to find out whether it was safe or not.

Stephen Seinor, laborer, was instantly killed on the tipple at the Beach Cliff mine on December 24. He was struck by a trip of three full cars which ran into the tipple with terrible velocity, caused by the breaking of a draw-bar on the last car to which the incline rope was attached. There are two safety switches on the incline, one about one-third of the distance or length of the incline from the top, and the other about the same distance from the bottom. When the draw-bar broke the trip was near the lower switch and before it could be closed had passed over it. This switch could not be placed any nearer to the tipple on account of the public road, but I suggested that they provide a stop block near the bottom of the incline and to use safety chains on the cars hereafter, but as this is a matter not provided for in the mining-law I can do nothing but advise.

TABLE I—*Showing Location, &c., of Collieries in the Seventh Bituminous Mine District.*

NAME OF COLLIERY.	Name of Operator.	Location—County.	Name of Superintendent.	Postoffice Address.
Allison,	J. V. H. Cook & Son,	Washington,	J. V. H. Cook,	Canonsburg.
Bower Hill,	Imperial Coal Company,	Allegheny,	Wm. Bald,	Imperial.
Bellwood,	Munhall Brothers,	do.	John Munhall,	Munhall.
Beck's Run,	H. C. Burghman, as trustee,	do.	Julius Esmiol,	Redman Mills.
Beadling,	Beadling Brothers,	do.	Wm. Beadling,	Beadling.
Beach Cliff,	Imperial Coal Company,	do.	Wm. Bald,	Imperial.
Bridgeville,	A. J. Shulte,	do.	C. P. Moyer,	Bridgeville.
Boyd,	Boyd Coal Company,	do.	Jesse Sanford,	Walker's Mills.
Boston No. 1 and 2,	W. H. Brown's Sons,	do.	Robert Cornell,	Boston.
Beach Mount,	Beach Mount Coal Company,	do.	J. C. McMichael,	Hickman.
Boon,	Canonsburg Coal Company,	Washington,	E. A. Upstill,	Canonsburg.
Brier Hill,	Patterson & Sauters,	do.	J. D. Sauters,	McDonald.
Black Diamond,	Thomas Taylor,	do.	Thomas Taylor,	Midway.
Brakenridge,	Brakenridge Coal Company,	Allegheny,	Alfred Hicks,	Leechburg.
Castle Shannon,	Castle Shannon Railroad Company,	do.	O. A. Rogers,	South Side, Pittsburg.
Cherry,	Heirs of Morris McCue,	do.	James Boyle,	Third avenue and Fry street, Pittsburg.
Champion,	Robbins Coal Mining Company,	do.	F. L. Robbins,	Penn Building, Pittsburg.
Dravo,	Lake Shore Gas Coal Company,	do.	C. Wisser,	Robbins, Westmoreland county.
Darr,	Osborne, Saeger & Co.,	Westmoreland,	A. W. Osborne,	West Newton.
Enterprise,	Hartley & Marshall,	Allegheny,	Roger Hartley,	South Side, Pittsburg.
Essen,	Essen Coal Company,	do.		Essen.
Enterprise No. 2,	Pittsburg and Bellevernon Coal Company,	Washington,		No. 8 Wood street, Pittsburg.
Federal,	Federal Coal Company,	Allegheny,	Wilfrid Stewart,	Federal.
Fox,	Thomas Fox,	do.	Thomas Fox,	Thirty-sixth ward, Pittsburg.
Federal Spring,	E. W. Powers,	do.		Hickman.
First Pool,	First Pool M. G. Coal Company,	do.	F. L. Robbins,	Penn Building, Pittsburg.
Fort Pitt,	Fort Pitt Coal Company,	do.		1010 Penn avenue, Pittsburg.
Glenshaw,	Glenshaw Coal Company,	do.	S. W. Spencer,	Glenshaw.
Grant,	Grant Coal Company,	do.	James Matthews,	Central Hotel, Pittsburg.
Hays Street Run Nos. 2 & 3,	H. C. Burgham, as trustee,	do.	J. Watson,	Hope Church.
Hastings Slope,	Slope Mine Coal Company,	do.	John Neish,	Bridgeville.
Hites,	McFetridge Brothers,	do.	George McFetridge,	Hites.
Idlewood,	James B. Steen & Co.,	do.	T. D. Steen,	Chartiers.
Jumbo,	Pittsburg Consolidated Coal Company,	do.	F. L. Robbins,	Penn Building, Pittsburg.
Leasdale,	Jesse H. Sanford,	do.	Jesse H. Sanford,	Walker's Mills.
Laurel Hill,	W. P. Rend & Co.,	do.	John Rend,	McDonald, Washington county.
Montours,	Imperial Coal Company,	do.	Wm. Bald,	Imperial.
Mansfield No. 2,	Mansfield Coal and Coke Company,	do.	Daniel Boden,	Mansfield Valley
Mansfield and Erie,	Alex. Patterson,	do.	Alex. Patterson,	Chartiers.
Midway,	Robins Coal Mining Company,	Washington,	F. L. Robbins,	Penn Building, Pittsburg.
Moon Run,	Moon Run Coal Company,	Allegheny,	N. F. Sanford,	Moon Run.
National,	National Coal Company,	do.	Edward Fisher,	Noblestown.
Nixon,	Chartiers Valley Coal Company,	do.	W. H. Linsley,	Joint.
Natrona,	Pennsylvania Salt Manufacturing Company,	do.	H. W. Boyd,	Natrona.
Nickel Plate,	J. D. Sauters,	do.	J. D. Sauters,	McDonald, Washington county.
Old Brown Hill,	A. J. Shulte,	do.	C. P. Mayer,	Bridgeville.
Ormsby,	Birmingham Coal Company, Limited,	do.	Joseph Keeling,	South Side, Pittsburg.

TABLE I—*Continued.*

NAME OF COLLIERY.	Name of Operator.	Location—County.	Name of Superintendent.	Postoffice Address.
Oak Ridge	Oak Ridge Coal Company, Limited	Allegheny	C. W. Schluederberg	Fourth avenue, Pittsburg.
Ocean Nos. 2, 4 and 5	Youghiogheny River Coal Company	do.	John F. Hoosack	Scott Haven, Westmoreland county.
Pacific	Lake Erie Gas Coal Company	do.	John F. Hoosack	Scott Haven, Westmoreland county.
O. I. C.	W. J. Steen	do.	W. J. Steen	Chartiers.
Powers	Chartiers Block Coal Company	do.	Wm. Baldwin	Federal.
Pine Creek	Robbins Coal and Coke Company	do.	F. L. Robbins	Penn Building, Pittsburg.
Port Royal No. 2	Port Royal Coal Company	Westmoreland	Isaac Brown	Fitz Henry.
Primrose	Pittsburg Consolidated Coal Company	Washington	F. L. Robbins	Penn Building, Pittsburg.
Streets Run	Harrison Gas Coal Company	Allegheny	D. A. Fisher	Hope Church.
Summer Hill	Frank Armstrong	do.	Frank Armstrong	Schmitt Building, Fifth avenue, Pittsburg.
Southwest	Youghiogheny River Coal Company	do.	John F. Hoosack	Scott Haven, Westmoreland county.
Star	Francis Mankedick	do.	Francis Mandedick	Sturgeon.
Venture	Saw Mill Run Coal Company	do.	E. N. Wildman	West Carson street, Pittsburg.
Walton	Joseph Walton & Co.	do.	Morris Capp	Carrie.
Willow Grove	Willow Grove Mining Company	do.	F. L. Robbins	Penn Building, Pittsburg.
West Newton	West Newton Coal Company	Westmoreland	A. W. Osborne	West Newton.

TABLE II.—*Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Seventh Bituminous Mining District, for the year ending December 31, 1891.*

NAMES OF COLLIERIES.	Location County.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Allison	Washington	37,488		37,000	208	63		1	20	1	4		
Bower Hill	Allegheny	85,695		85,695	200	170		2	40		8		
Bellwood	do.	82,000		80,000	157	206	1				12		
Becks Run	do.	51,330		51,330	86	208				4	15		
Beadling	do.	100,000		100,000	198	172			300	1	7		
Beach Cliff	do.	85,667		85,667	225	151	1			2	2		
Bridgeville	do.	64,118		64,118	174	97					7		
Boyd	do.	37,504		37,504	187	54		1			4		
Boston No. 1	do.	121,140		121,140	168	318				6	14		
Boston No. 2	do.	55,440		55,063	116	212				3	11		
Beechmount	do.	61,527		61,527	240	144	1	3		1	5		
Boon	Washington	60,000		60,000	198	83	1		20	1	4		
Brier Hill	do.	125,646		117,650	264	180		1		2	2		
Black Diamond	do.	11,600		11,500	110	40		1		1	2		
Brakenridge	Allegheny	15,254			281	18			162		1		
Castle Shannon	do.	49,139			300	84					6		
Champion	do.	7,400		7,198	43	109				2	4		
Cherry	do.	40,489		40,149	276	68					8		
Dravo	do.	43,067		43,067	186	81		1			5		
Darr	Westmoreland	68,478		68,478	275	92		2		1	2		
Enterprise	Allegheny	155,380		155,330	215	287	1	3	275	3	15	1	
Essen	do.	61,086		61,086	197	159				2	6		
Enterprise No. 2	Washington	10,539		10,539		61				2	3		
Federal	Allegheny	62,114		62,114	240	132			10		7		
Fox	Allegheny	22,447			300	47				1	2		
Federal Spring	do.	62,538		62,538	170	151					2		
First Pool	do.	57,000		55,980	202	99				1	8		
Fort Pitt	do.	27,224		27,224	149	70					8		

TABLE II—*Continued.*

NAMES OF COLLIERIES.	Location—County.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Glenshaw	Allegheny	11,750		10,000	309	26			100		4		
Grant	do.	60,107		10,107	218	110		2			16		
Hays Street Run Nos. 2 and 3	do.	83,274		83,274	95	310				24	27		
Hastings slope	do.	46,545		46,545	134	63				2	6		
Hites	do.	64,000		64,000	261	62			500		8		
Idlewood	do.	30,400		30,400	180	118					10		
Jumbo	Washington	165,000		162,417	252	254	1	2		8	17		
Laurel Hill No. 1	Allegheny	148,435	8,892	148,435	265	263	1	7		21	30		51
Laurel Hill No. 2	do.	138,000		138,000	275	114				7	12		
Leasdale	do.	49,530		49,530	198	61				1	5		
Montour	do.	66,766		66,766	197	153		2	50	2	7		
Mansfield No. 2	do.	190,000		190,000	202	287		2		2	18		
Mansfield and Erie	do.	12,352		12,352	200	35					3		
Midway	Washington	48,000		47,207	193	107				2	7		
Moon Run	Allegheny	26,311		26,311		125					9		
National	do.	44,543		44,543	225	79				1	6		
Nixon	do.	56,822		56,822	171	131		1			12		
Natrona	do.	28,800	1,500		306	50			250	1	8		10
Nickel Plate	do.	90,361		68,071	257	187	1			1	12		
Old Bower Hill	do.	17,627		17,627	175	23		1			1		
Ormsby	do.	70,000			200	137	1			4	10	1	
Oakridge	do.	64,172		64,172	256	106		1		1	5		
Ocean No. 2	do.	204,830		204,828	251	293	2	1	329		15		
Ocean No. 4	do.	55,617		55,617	160	158		1	175	1	10		
Ocean No. 5	do.	125,312		125,312	264	189			275		10		
O. I. C.	do.	20,938		20,938	190	57		1			2		
Pacific	do.	117,222		107,734	243	162			106		10		
Penny	do.	6,000			80	24					3		
Powers	do.	96,299		96,299	186	200		3		3	11		
Pine Creek	do.	99,000		98,370	232	113	3	1	542	2	9		
Port Royal No. 2	Westmoreland	127,778		127,778	288	179		5	916	2	16		

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TABLE III.—*Showing the number of each class of Employes at each Colliery in the Seventh Bituminous Mine District, during the year 1891.*

NAMES OF COLLIERIES.	Location.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.						Grand totals—inside and outside.
		Inside foreman or mine-boss.	Miners.	Miners' boys under 16 years of age.	All company men.	Drivers and runners.	Door boys	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	All company men.	Superintendents, book-keepers and clerks.	Total outside.	
Allison	Washington	1	55	. . .	1	3	. . .	60	. . .	1	. . .	1	1	3	63
Bower Hill	Allegheny	1	145	6	3	6	2	163	. . .	2	. . .	4	1	7	170
Bellwood	do.	1	160	15	2	11	. . .	189	1	2	1	12	1	17	206
Becks Run	do.	1	160	. . .	3	16	2	182	. . .	2	4	18	2	26	208
Beadling	do.	1	135	10	4	7	5	162	1	2	1	5	1	10	172
Beach Cliff	do.	1	110	6	3	8	. . .	128	. . .	2	2	19	. . .	23	151
Bridgeville	do.	1	75	2	2	5	1	86	1	2	. . .	7	1	11	97
Boyd	do.	1	42	2	. . .	4	2	51	1	1	. . .	1	. . .	3	54
Boston No. 1	do.	1	240	20	6	16	1	284	1	4	4	24	1	34	318
Boston No. 2	do.	1	150	12	5	13	1	182	1	4	4	20	1	30	212
Beachmount	do.	1	125	. . .	2	5	. . .	133	1	1	1	7	1	11	144
Boon	Washington	1	65	4	2	4	. . .	76	1	1	1	3	1	7	83
Brier Hill	do.	1	140	9	5	10	1	166	1	1	2	8	2	14	180
Black Diamond	do.	1	30	4	. . .	2	. . .	37	. . .	. . .	2	. . .	1	3	40
Brakenridge	Allegheny	1	14	1	. . .	1	. . .	17	. . .	. . .	. . .	1	. . .	1	18
Castle Shannon	do.	1	60	4	2	6	. . .	73	1	3	. . .	6	1	11	84
Champion	do.	1	70	13	8	5	. . .	97	. . .	2	2	7	1	12	109
Cherry	do.	1	50	4	2	4	. . .	61	1	2	. . .	3	1	7	68
Dravo	do.	1	65	4	2	3	1	76	1	1	. . .	2	1	5	81
Darr	Westmoreland	1	75	. . .	3	2	. . .	81	1	2	2	5	1	11	92
Enterprise	Allegheny	3	200	30	17	12	2	264	1	4	4	11	3	23	287
Essen	do.	2	130	6	3	7	2	150	1	2	2	4	. . .	9	159
Enterprise No. 2	Washington	1	50	. . .	2	3	. . .	56	. . .	1	2	1	1	5	61
Federal	Allegheny	1	110	5	2	6	2	126	1	1	. . .	3	1	6	132
Fox	do.	1	40	. . .	1	2	. . .	44	1	. . .	1	1	. . .	3	47
Federal Spring	do.	1	130	5	2	5	2	145	1	1	. . .	4	. . .	6	151
First Pool	do.	1	69	6	5	6	. . .	87	. . .	1	1	9	1	12	99
Fort Pitt	do.	1	55	. . .	1	4	. . .	61	1	3	. . .	4	1	9	70
Glenshaw	do.	1	17	2	1	2	. . .	23	. . .	. . .	. . .	2	1	3	26
Grant	do.	1	80	7	3	7	5	103	. . .	1	. . .	5	1	7	110
Hays Street Run Nos. 2 and 3	do.	2	260	. . .	2	22	2	288	1	4	2	13	2	22	310
Hastings slope	do.	1	48	2	1	4	. . .	56	1	1	1	3	1	7	63
Hites	do.	1	45	3	2	4	1	56	. . .	1	. . .	5	. . .	6	62

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TABLE IV.—*List of Fatal Accidents occurring in and about the Mines of the Seventh Bituminous Mine District, for the year ending December 31, 1891.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	Number of orphans.	Name of Colliery.	Location County.	Nature and Cause of Accident.
Feb. 6.	Zontan Anetico,	Miner,	29	Yes.	2	Summer Hill,	Allegheny,	Killed by fall of slate in his room.
24.	Petro Secam,	do.	20	No,	..	Beachmount,	do.	Killed in his room by fall of slate.
Mar. 19.	Nicholas Rider,	do.	40	Yes.	8	Ormsby,	do.	Killed by fall of slate and roof while drawing props.
April 7.	Mike Dominick,	do.	35	No,	.	Pine Creek,	do.	Killed by roof fall in his room.
13.	Daniel Downs,	do.	27	No,	..	do.	do.	Fatally injured by fall of roof; died two days after.
June 27.	Solomon Gunter,	do.	45	Yes.	..	Jumbo,	Washington,	Killed by fall of slate in his working place.
July 10.	Patrick Mullhern,	do.	45	Yes.	1	Ocean No. 2,	Allegheny,	Killed in his room by fall of slate.
18.	Stephen Robertson,	do.	24	No,	..	Venture,	do.	Killed by fall of slate in his room.
Aug. 21.	Richard Herley,	Mule driver,	42	Yes	2	Boon,	Washington,	Killed by coal cars.
Oct. 8.	John Connell,	Miner,	30	Yes.	2	Enterprise,	Allegheny,	Killed by being crushed with loose slate in sinking a shaft.
24.	John Englet,	Mule driver,	40	Yes.	6	Walton,	do.	Fatally injured by coal cars; died November 7.
27.	Nicholas Dongies,	Mine boy,	17	..	..	Bellwood,	do.	Killed by fall of slate in his room.
31.	Anton Zupatiske,	Miner,	27	Yes.	..	Pine Creek,	do.	Killed by fall of roof in his room.
Dec. 7.	James Sweeney,	Mine boy,	16	..	..	Laurel Hill No. 1,	do.	Fatally burned by crude petroleum oil.
11.	Robert Davidson,	Laborer,	69	Yes.	..	Nickel Plate,	Washington,	Fatally injured by dilly trip (died next day).
23.	John Mojock,	Miner,	25	Yes.	1	Ocean No. 2,	Allegheny,	Killed by falling slate.
24.	Stephen Seinor,	Laborer,	26	No,	..	Beach Cliff,	do.	Killed by coal cars (on the tipple outside of mine).

TABLE V.—*List of Non-Fatal Accidents occuring in and about the Mines of the Seventh Bituminous Mine District, for the year ending December 31, 1891.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
Jan. 2.	Bornadie Andres,	Miner,	45	No.	Beachmount,	Allegheny,	Collar bone broken by a premature blast in the coal.
9.	William McGrogar,		28	No.	do.	do.	Foot crushed by coal cars.
9.	Edward Semon,	Miner,	30	Yes.	Montours,	do.	Slightly hurt by fall of slate.
19.	Thomas Cornell,	do.		No.	Port Royal No. 2,	Westmoreland,	Hip broken by fall of coal.
21.	Powell Salvotsky,	do.	35	Yes.	O. I. C.,	Allegheny,	Both legs fractured by fall of slate.
23.	Louis Welgand,	do.	38	No.	Dravo,	do.	Leg broke by fall of slate.
Feb. 2	William Faverite,	do.			Grant,	do.	Seriously injured by fall of slate.
11.	George Hopkins,	Mule driver,			do.	do.	Collar bone broken by coal cars.
19.	Robert Smith,	Miner,	19	No.	Laurel Hill No. 1,	do.	Injured by fall of roof (was taking the roof down at the time).
Mar. 3.	William Lamey,	Miner boy,	14		do.	do.	Leg broken by attempting to jump on a trip of moving cars.
April 2.	August Pachel,	Miner,	27	Yes.	Mansfield No. 2,	do.	Thigh broken by fall of slate.
8.	Walter Merryman,	do.	38	Yes.	Jumbo,	Washington,	Leg broken by fall of slate.
9.	Thomas Redfern,	do.	53	No.	Port Royal No. 2,	Westmoreland,	Foot injured by fall of slate.
16.	Charles Bradley,	Mule driver,	27	No.	Boyd,	Allegheny,	Slightly injured by coal cars.
18.	Victor Tourney,	Miner,	35	Yes.	Black Diamond,	Washington,	Finger cut off by falling slate.
May 15.	John Crickson,	do.	43	No.	Port Royal No. 2,	Westmoreland,	Slightly injured by an explosion of fire-damp.
June 3.	Robert Holmes,	Miner boy,	14		Primrose,	Washington,	Slightly hurt by coal cars.
8.	Simon Bendio,	Miner,	32		Powers,	Allegheny,	Hip dislocated by a fall of slate
29.	(Name not given),	do.			Beachmount,	do.	Leg broken by fall of slate.
29.	Francis Vandermeise,	do.			Laurel Hill No. 1,	do.	Seriously hurt by fall of slate.
30.	Egeine Yaumanies,	do.			do.	do.	Leg injured by fall of slate.
30.	Thomas B. Skidmore,	Rodman,			do.	do.	Foot hurt by wire hauling rope and guide wheel.
July 3.	Edward Streskey,	Miner,	28	No.	do.	do.	Head and shoulders injured by fall of slate.
8.	John Tinkrish,	do.	34	Yes.	Bower Hill,	do.	Seriously burned by explosion of gas.
9.	Anton Smith,	do.	26	No.	Port Royal No. 2,	Westmoreland,	Leg broken by fall of coal.
17.	Henry Hilson,	do.	30		Old Bower Hill,	Allegheny,	Seriously injured by fall of slate.
Aug. 10.	Paul Liptack,	do.	25	No.	Darr,	Westmoreland,	Leg broken by fall of coal and slate.
10.	George Harris,	do.			Oak Ridge,	Allegheny,	Seriously injured by fall of slate.
14.	Benjamin Morris,	Mule driver,	19	No.	Laurel Hill No. 1,	do.	Foot seriously injured by coal cars.
24.	Walter Wincle,	Miner,	26	Yes.	Bower Hill,	do.	Leg broken by falling slate.
Sept. 21.	Albert Riley,	Mule driver,	22	Yes.	Brier Hill,	Washington,	Leg broken by coal cars.
22.	William Cellers,	Miner,	45	Yes.	West Newton,	Westmoreland,	Leg injured by fall of slate.
23.	Peter Ott,	do.	69	Yes.	Nixon,	Allegheny,	Leg broken by fall of slate.
25.	Nelson Brown,	do.	25	No.	Ocean No. 4,	do.	Thigh fractured by fall of slate.
29.	Joseph Companion,	do.	40	Yes.	Primrose,	Washington,	Leg broken by fall of coal.
29.	Barnet Finns,	do.	25	Yes.	Jumbo,	do.	Injured by fall of slate.
Nov. 5.	Dorro Demickel,	do.	28	No.	Primrose,	do.	Back injured by fall of coal and slate.

TABLE V—*Continued.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
Nov. 9.	John Plemon.	Miner.	36	Yes.	Powers.	Allegheny.	Hip dislocated by fall of slate.
20.	Mike Trogan.	do.	35	Yes.	Port Royal.	Westmoreland.	Leg broken by fall of slate.
21.	James Rafla.	do.	24	No.	Montours.	Allegheny.	Leg broken by fall of coal.
Dec. 1.	Robert Wise.	do.	28	Yes.	Enterprise.	do.	Both legs broken by fall of slate.
3.	Thomas Smith.	do.	50	Yes.	Mansfield No. 2.	do.	Knee cap seriously injured by coal from a powder blast.
3.	George Patronitz.	do.	35	No.	Powers.	do.	Sight of one eye destroyed by premature powder blast.
7.	George Bohine.	do.	26	Yes.	Pine Creek.	do.	Injured by fall of coal.
7.	John Gallo.	Mule driver.	35	...	Ocean No. 2.	do.	Leg broken by coal cars.
16.	John Johnson.	Mine boss.	30	Yes.	Enterprise.	do.	Jaw bone broken by fall of roof coal.
16.	William Ball.	Miner.	29	Yes.	do.	do.	Thigh broken by fall of roof coal.
20.	James Gray.	do.	22	Yes.	Allison.	Washington.	Injured by fall of slate.
30.	E. Dickson.	Laborer.	66	Yes.	Darr.	Westmoreland.	Foot crushed by railroad cars at the tipple.

EIGHTH BITUMINOUS DISTRICT.

(BEDFORD, CENTRE, CLEARFIELD AND HUNTINGDON COUNTIES.)

Hon. THOMAS J. STEWART, *Secretary of Internal Affairs:*

SIR: I have the honor of submitting herewith the annual report of the Inspector of the Eighth bituminous district. My predecessor resigned August 1, 1891 and I received my appointment nineteen days later. I was therefore unable to commence my duties until about September 1, during these four months I visited ninety mines, examined and tested half a dozen scales and attended the investigation of the causes of six fatal accidents. Considering the territory necessarily traveled over to do this work and the limited time I had at my disposal, I feel justified in making excuse for any incompleteness of this report.

I have given a brief description of all the mines that I visited and find that I have inspected about 75 per cent. of the whole number in the district in time for this report, the other 25 per cent. were inspected by my predecessor immediately before his resignation.

The number of fatal accidents during 1891 was 14, being 58 per cent. of the number for 1890; of non-fatal accidents there were 65, being 78 per cent. of the number for 1890. Of the 14 fatal accidents only one was what may be considered purely accidental, 7 of them might have been prevented by the exercise of ordinary care and precaution, while the other 6 were either from gross negligence or foolhardiness. One of the unfortunates was fatally burned by the explosion of a keg of powder while attempting to open it with a pick. This should be a warning to those who are in the habit of handling powder in such a reckless manner. Another met his death by an equally foolish practice, namely, that of tamping dynamite in a hole, as will be seen by reference to the account of this accident in another place. This man had already eleven sticks of dynamite in the hole and was forcing these back with an iron bar in order to make room for three other pieces he had ready to put in. In this connection I desire to call attention to the fact that dynamite should not be handled like black or common blasting powder, it is not exploded by squibs or fuse, but by detonators or caps and the shock thus occasioned sets off the explosive. The same result may be obtained

by solid tamping of the explosive in a hole, as in the case here spoken of, whenever the force of the ramming approaches the force contained in the detonator then the explosion is sure to occur and a man can easily exert the amount of force by the use of an iron rammer. The tamping of dynamite should therefore be avoided, even with dirt after the explosive is put in the hole, for all that is necessary, is to put a few hands full of dirt against the explosive very lightly or if practicable fill the hole with water; if the hole however be for instance two inches in diameter and the stick of dynamite only and one-half inches and the greatest resistance be opposite the extreme end of the hole, and it is desired to have the explosive compact at that point, the cartridges may be broken and the mixture pushed into the hole by the use of a stick or something limber that ramming may not be necessary.

Some other accidents were caused by equal recklessness in other directions. One described in the table of accidents is of an old miner who had taken coal off his rib or roadside to the extent of exposing 144 square feet of "bone coal" fully 13 inches thick, and under this, he continued to work with his two boys without the use of a prop, notwithstanding that one side, 18 feet in length, was what is called "loose end," and in reply to a warning given him by the track-layer just 15 or 20 minutes previous, he asserted that it was so safe that he could sleep under it. In this case his oldest son was killed and he himself injured. Such carelessness as this is criminal and but for the fact that the poor man was sufficiently punished by the loss of his son he would have been tried for the life of the boy, and so in the face of so many accidents it is astonishing that men do not take better care of themselves.

Of the 14 fatal accidents there were three inquests held by coroner's juries and in each case the jury found that the unfortunates themselves were to blame, as loss of life or even injury might have been averted if proper precautions had been taken, and in the other 11 cases the causes of death and the negligence of the party at fault was so evident that no inquests were deemed necessary. The number of wives left widows by these fatalities was 7 and the number of orphans 23. The following tables show the cause, number and percentage of fatalities and injuries:

CAUSES OF ACCIDENTS.	Number.	Per cent.
Falls of coal,	1	7.14
Falls of slate and rock from roof,	6	42.86
Falls of bone coal from roof,	4	28.58
Being run over by loaded cars,	1	7.14
Explosion of keg of powder,	1	7.14
Premature explosion of dynamite,	1	7.14
Total,	14	100.00
Falls of slate and rock from roof,	20	30.78
Hurt by moving empty and loaded cars,	15	23.07
Falls of coal,	17	26.16
Falls of bone coal,	5	7.69
Preparing powder for blast,	2	3.07
Premature explosion of dynamite,	2	3.07
Being kicked by a mule,	1	1.54
Flying steel from a wedge,	1	1.54
Falling from a set of timber,	1	1.54
Injured in railroad cars by coal being dumped,	1	1.54
Total,	65	100.00

It is pleasant to note that accidents from falls of coal are less than the number in 1890, but on the other hand those from falls of roof have rather increased, while those from moving cars have increased alarmingly, much of this may be attributed to the practice in many of the mines of piling the dirt gathered from the roads along the sides thereof, instead of hauling it outside or into old workings. The dirt from sides of roads should be kept cleaned up below the tops of the rails and especially on and about side tracks where much walking is done about moving trips. Headings should be driven wide enough to allow room to pass cars all along, in addition to the required "safety holes."

The matter of drainage is very much neglected in this district, there is hardly any attempt at ditching along the hauling roads. In many of the old mines the water has made for itself a course in the middle of the track. A reform in this direction is sadly needed, and I would insist on it being attended to in new mines, but many of the old ones are so nearly exhausted that I would hardly be justified in insisting on it.

The efforts in the direction of better ventilation are more marked than those for drainage, but there is much room for improvement in this direction. The furnace is the chief ventilator in this district, and very few fans are in use, four new ones were put in during 1891, while improvements to furnaces are noted in several instances. Complaints however are made of some small operators, by mine-bosses, that they cannot get material to make the necessary repairs to their furnaces, and brattices, and in some cases where I have notified the operator to furnish brick, iron, boards, brattice cloth, etc., they have made the excuse that the price they get for their coal does not justify them in undergoing such ex-

pense. I have never heard this from the larger operators, I therefore conclude that for the sake of compliance with the mining act the process of "big fish swallowing the small fry" might go on indefinitely, if it were not for the other *evil*—tendency to monopolization.

Several mines in the Houtzdale region were finished during the year 1891, but shipment from here was not materially reduced. The number of mines however that will be finished during this year will make a marked difference in the future output.

The following is a summary of production, etc., deduced from the tables in another part of this report:

Net tons of coal produced in 1891,	6,669,159
Net tons of coal produced in 1890,	6,532,736
Increase for 1891,	136,423
Net tons of coal shipped in 1891,	6,340,787
Net tons of coal shipped in 1890,	6,142,341
Increase in 1891,	198,446
Tons of coke produced in 1881,	115,629
Tons of coke produced in 1890,	223,796
Decrease in 1891,	108,167
Number of mines reported,	116
Number of days worked by all the mines,	23,168
Number of mining-bosses employed January 1, 1892,	99
Number of miners (men) employed,	7,497
Number of miners (boys) employed,	842
Number of company men inside,	273
Number of drivers and runners,	603
Number of trappers and other boys,	209
Total number employed inside,	9,529
Total number employed outside,	801
Total number employed inside and outside,	10,330
Tons of coal mined for each fatal accident,	476,369
Tons of coal mined for each non-fatal accident,	102,602
Kegs of powder reported (much more used),	31,561
Steam boilers in use,	89
Stationary engines in use,	51
Locomotives in use,	4
Mules at work,	983
Electric pumps in use,	1
Average days worked by 116 mines,	199.6
Average number gross tons per man (or full turn,)	752
Average number gross tons per man per day,	3.77

Average earnings per man per year,	$376 00
Average earnings per man per month,	31 33
Average earnings per man per day,	1 88½

The amount paid for yardage and dead-work will add a little to the average earnings, but we cannot ascertain how much this will be.

There are in the district 126 mines, but by reason of frequent changes in ownership, and irregularity of operation, there are only 116 reported.

The number of stationary engines reported would indicate that coal is being extensively hauled by machinery. I am convinced however that several operators have reported their steam pumps as stationary engines.

There are, however, many good hauling plants in the district, and I had intended being able to give a sketch of one or two in this report, but all I can give now is the accompanying plan drawn to a scale of 100 feet to the inch, of the rope haul at Grass-flat mines of the Clearfield Bituminous Coal Corporation at Peale in Clearfield county.

The system is "main and tail rope," erected by the Vulcan Iron Company of Wilkesbarre. The engines are 16″×30″, geared link reversing engines with 5′ grooved cast iron drums. The drums are operated by friction clutches. The rope is seven-eighths main and three-fourths tail. The distance of the present haul is 3,000′, but the system is arranged for one mile additional haul and two branches. The grades are undulating, the greatest portion being against the load, coming from the drift mouth with an up-grade of 3.25′ to 100′. The capacity of the plant is 1,500 tons daily, hauling 37 to 40 mine cars per trip. It has already hauled in one load 65 tons of coal.

At this mine is the only electric pump in the district. The plant consists of a 10 horse power dynamo and engine outside and an 8 horse power moter attached to a rotary pump inside the mines. The motor and pump are distant from the dynamos 3,100′. The capacity of the pump is 15,000 gallons per hour, and it has been running constantly for the past 17 months. The water is lifted 24′ through 500′ of pipe. The current is 125 volts. It is intended to move the dynamos and engine to hauling engine boilers, so that one man may attend to both. I am under obligation to Superintenedent R. A. Shillingford for the above information.

There is also accompanying this report a map of Electric mine and Atlantic No. 2, both ventilated on the split system; the first by a furnance and the other by a fan. Both entirely satisfactory, and are placed here as an example to those who are interested in better means of ventilating coal mines. W. S. Edwards is mine-boss at Electric, and Wm. Pollock is in the same capacity at Atlantic No. 2; both are gentlemen who understand their business.

It will be noticed, by reference to summarized tables, that the average wages are $1.88½ per miner. This is 14½ cents lower than the average

for 1890. Notwithstanding that wages are low, the miner is loath to leave for fields where he could earn more. The chief reason for this is that this region is free from gas or fire-damp, and he prefers working here for a living, rather than enjoy higher wages in gaseous mines, where he has not the same assurance of returning at night to the bosom of his family. There is now, however, an indication that the future mines of this district will be more or less gaseous, as fire-damp has already been found in one of them, but luckily this is one of the best ventilated mines in the district, being ventilated by a fan.

At the request of some and for the convenience of all persons interested I append herewith a list of mine-bosses, corrected to January 1, 1892. As changes are frequent however, it will not be of service long. Such frequent changes are also bad for bosses, operators and the mines.

Name of Mine.	*Name of Boss.*
Acme,	John McGreory,
Alexander and Eureka Nos. 1 and 2,	Thomas Blyth,
Atlantic No. 1,	Jon. Hutchison,
Atlantic No. 2,	Wm. Pollock,
Ashland,	A. P. Isenberg,
Baltic Nos. 1, 2 and 3,	Wm. Irwin,
Belvern,	John B. Hughes.
Benedick and Champion,	W. S. Reed.
Bessemer,	T. W. Jones.
B. Diamond,	John O'Neill.
Brittanic,	Geo. Rees.
Brown,	Wm. Powell, Sr.
Bloomington Nos. 1 and 2,	R. M. Walker.
Bloomington Nos. 3 and 4,	John Boag.
Cataract,	D. Paul Hyde.
Central and Electric,	M. S. Edwards.
Chester,	James Gatehouse.
Coal Run,	Thomas Young.
Coaldale No. 3,	Jas. Dunsmore.
Coaldale, No. 5	Jas. Scurfield.
Crescent,	Lee Ott.
Chevington,	Frank Grimes.
Colorado Nos. 1 and 2,	Thos. R. Pilkington.
Colorado No. 3,	Rich Morris.
Columbia No. 5,	B. F. Smith.
Cumberland,	W. H. Speer.
Cunard,	Jno. L. Miller.
Decatur No. 1,	Jno. Todd, Sr.
Decatur No. 2,	D. B. Patrick.
Derby,	Thos. Stephenson.
Drane,	Jos. Wheatley.

Name of Mine.	*Name of Boss.*
Eureka No. 2,	Jas. Blades.
Eureka No. 5,	Thomas Forsyth.
Eureka No. 7,	Thomas Estep.
Eureka No. 8,	J. S. Kirkwood.
Eureka No. 9,	John Allen.
Excelsior No. 4,	Jno. Williams.
Ferndale,	Jno. Maurice.
Fisher,	Jno. Lloyd.
Forest,	Jno. Hooten.
Fulton,	E. C. Grundy.
Glenwood Nos. 1 and 2,	C. A. Paul.
Gazzam No. 1,	Jas. Methven.
Gazzam No. 4,	Samuel Green.
Grassflat,	John Charlton, Sr.
Ghem,	S. E. Pfoutz.
Guion,	J. L. Nicholson.
Highland,	Jas. Ginnick.
Huntingdon,	E. F. Gould.
Jefferson,	Henry Byron.
Karthaus,	A. G. Spear.
Kentuck,	John Harvey.
Keystone,	Thos. R. Simpson.
Kearney,	Geo. B. Ott.
Knox,	Wm. Creichton.
Kyler,	Geo. Dixon.
Lancashire No. 1,	Rich. Ashcroft.
Lancashire No. 2,	Thos. Pilkington.
Laurel Run,	John E. Hawkins.
Lennder's Slope,	Cornelius Meagher.
Logan and Pioneer,	Wm. Fitzgerald.
Loraine,	Geo. Gould.
Mapleton,	Thos. M. Simpson.
Montana,	J. D. Jones.
Mavarion,	Robert Spence.
Morrisdale,	Jno. M. Click.
Mt. Equity,	Jas. C. Allen.
Mt. Vernon No. 5,	Jas. S. Campbell.
Mt. Vernon No. 6,	John May.
O'Shanter,	W. J. McDowell.
Ocean Nos. 1 and 2, Huntingdon,	Daniel Ryan.
Ocean No. 1, Clearfield,	Hugh Rowland.
Ocean No. 2, Clearfield,	Daniel Alsop.
Pacific,	Edward Lloyd.
Pardee Nos. 1 and 2,	D. R. Phillips.

Name of Mine.	*Name of Boss.*
Phœnix,	Rich Dunn.
Ramey,	Evan Evans.
Reading,	Michael Cairns.
Retort,	Samuel Twiggs.
Robertsdale,	Charles Conner.
Rothrock,	Jas. Starford.
Sommerville,	D. J. Campbell.
Staffordshire,	Thos. Brown.
Sterling No. 1,	Geo. Commons.
Sterling No. 2,	Michael Craig,
Sterling No. 7,	Hugh Dick.
Shoff,	J. J. McGonigal.
Troy,	Jno. McGonigal.
Tunnel and Woodland,	E. F. Townsend.
Victor No. 1,	Alex. Dunsmore.
Victor No. 3,	Alex. Monteith.
Washington,	D. H. Campbell.
Webster No. 4,	John Stoker.
Hoyt's Mine,	Charlton Dixon.
Perks,	John Archibald.
Gearhart,	Rich. Lobb.
Transit,	E. A. Howe.
Henderson's,	Joel Delong.
Geo. Maxwell,	Thos. R. Pilkington,
Wm. Todhunter,	Bernard McCann,
Daniel Green,	S. E. Pfoutz,
James McAlarney,	John Y. Jones,
Wm. E. Williams,	John Baird.
John E. Robison,	John Morris.

The above named twelve persons obtained certificates of competency at the examination held during the week commencing January 26, 1892. All received second-grade certificates except John Baird and John Morris, the two last named, they received certificates which entitled them to boss in any bituminous mine.

The law requiring the aspirant for mine-boss to hold a "certificate of competency" has been the means of awakening the minds of many to the study of the science of mining, so that a subject that was known to only a few people previous to 1885, is now being acquired by hundreds in each mining district, and in consequence every examination has large numbers of applicants for certificates. There were in attendance at the Eighth district examination, January 26, 1892, 52 applicants, 12 of them, or about 23 per cent., as named before were successful.

Some venture the opinion that there are too many certificated men already in the field, that many of them being anxious for positions, offer

their services sometimes by the day, at a rate very little above what is paid usually to inside company men. Whether this is true or not, I cannot say, but one thing is certain the wages of mine-bosses are no higher now than they were previous to 1885, when a certificate was not required; but as a rule the mine-bosses of the present day are certainly men of greater capabilities than those found in these positions previous to 1885. It is reasonable to suppose that men who have had the requisite practical experience, and have given years of study as well, to the theory of mining, would be better men from the standpoint of economy and safety than men who have their own experience only to give, or men who have nothing but theory, or, in other words, the man who has both "practice and theory" is a better man than he who has but "practice" or "theory," and if he is a better man he ought to be worth more money. The claim of some operators therefore that certificated men are "book learned" men and are in consequence poor bosses is based upon truth, but operators expect too much from mine-bosses.

They expect them to be first-class miners, good track-layers, drivers, blacksmiths, carpenters, weigh bosses and clerks, that they should be good mining engineers. That their knowledge of pumps and machinery should be perfect; they are expected to be able to select from a drove, a mule that will give entire satisfaction, and to know that the grain and hay bought for the stock is first-class; they are expected to understand human nature thoroughly, for, as a rule, they are responsible for the conduct of the men they hire, and if the mine-boss does not come up to these requirements, he is no good. Oftentimes the real duties of the mining-bosses are performed by some one else, while they are making themselves the slaves of the operators by attempting to fill the places of a half dozen men. The Inspector sometimes finds him laying track, dumping coal, oiling cars, picking slate, breaking in green mules, and at doing other such jobs, instead of attending to the proper working of the mine, looking well after the ventilation and drainage of the same, and the safety of the men employed therein. He should consider that the law holds him responsible for these things, and not for doing jobs that the company should pay other men for. While the mine-boss who has but few men to look after, may be of much service to his employer in making himself generally useful, he should not devote his entire attention to any one job for any length of time, for while he may be thus engaged something may occur which would cost the company much more than the value of the labor he performs. Just how to ascertain by an examination whether or not a man will make a good mining-boss, is something that the examining boards have not yet ascertained, for with a written examination, as the law requires, it is impossible to find anything out concerning a man's executive ability. Greater discretion should be given the board, so that they may find out in their own way if the

applicant for certificate has the qualifications that go to make a good mine-boss.

While preparing this report I paid a visit to the Cottage hospital at Phillipsburg. The state authorities did well in locating this institution; it is in the center of a large mining population, and the site upon which it is erected is admirably suited for such a purpose. The hospital was formally opened February 22, 1891, and in less than one year 93 patients had received the benefits of its treatment, of these 46 were miners and 38 were injuries received in and about the mines. There are 24 cots or beds in the wards and 14 of them have been the greatest number occupied at one time. Nine patients have been the average; 3 deaths have occurred in the hospitals, two of the cases were nearly dead when brought within its walls. There have been 6 cases of amputation of arms, 3 cases of amputation of legs, and a great number of fingers and parts of hands taken off. There have been two cases of double amputation, and in both cases it has been the right leg and left arm; there have been more broken legs than any other class of injuries. The average duration of the most serious cases has been 88 days. Great success has attended all the cases brought under its care.

I would like to help dispel the prejudice that exists among many miners of the English-speaking classes against treatment in hospitals, I am satisfied that notwithstanding the comfort and convenience of some homes among miners, that a man injured in any manner and to any extent can at this hospital be kept cleaner, and healthier and receive better attendance than at his own home, for the reason that everything that conduces to the comfort and well being of an injured person is here provided, and he is attended by kind, considerate and experienced nurses, and being constantly under medical vigilance, he is given food that suits his condition, and is not allowed to eat that which counteracts the efforts of nature to reassert herself and the influence of medicine to aid her. The superintendent and chief nurse is Miss M. A. Fisher, and her politeness, kindness and patience, and her ability is acknowleded; she is aided by Mr. E. Dixon, interpreter and ward nurse, and Mr. B. Baker, night nurse, who are both genial young men and are well thought of. Dr. Alport is physician-in-chief, and Drs. Buckingham and Andrews are the present attendants.

Yours respectfully,

D. H. THOMAS.

BRISBIN, PA., *February 23, 1892.*

MINES OF HUNTINGDON COUNTY.

Eichelberger or Fisher.—This is an old mine now reopened on what is known here as the Barnet seam, the output is small. Ventilation is natural but preparations are now being made to put in a furnace at the foot of a shaft that is seventy-six feet deep. When this is done there should be plenty of air.

Ocean.—This is one of the old Moredale mines. I walked fully one and one-fourth miles to reach the few men at work and finally found them working without a particle of air, except that kept in motion by the movement of the cars whenever the driver would visit them. This mine is working the Fulton seam and is connected with a new opening on the Barnet seam by a rock tunnel. I recommended the withdrawal of the men from the old to the new mine and the placing of a fan on the old opening instead of putting a furnace shaft down into the new mine.

Robertsdale.—This is a slope opening into the Barnet seam, the coal being hauled by main and tail-rope system a distance of 3,500 feet. There are evidences of extensive improvements having been made within two years. The ventilation is produced by a sixteen-foot fan and it is efficient and well conducted around the working places. The quantity at the fan was measured and found to be 55,000 cubic feet. This is split into sections by natural means with the result that the mine is well ventilated.

Woodvale Shaft.—This is a mile or so distant from the slope and is under the same management. The shaft is well put down, the workmanship having been first-class, the hoisting arrangements are complete in every particular. The foot of shaft is well laid off for the handling of coal, the cages and their attachments are first-class. The nicely fitted cone-shape serrated catches, which act with wonderful precision, were once tried here with perfect satisfaction. The ventilation was created by exhaust steam from pumps; there being as yet no second opening, the shaft was partitioned off for this purpose.

PHILIPSBURG AND BEACH CREEK MINES.

Acme.—This mine is working on the B coal, has been idle a considerable portion of the year, therefore I did not have the privilege of examining it.

Baltic.—Nos. 1 and 2 Baltic are two drifts into the same territory, having separate dumps. No. 3 Baltic works the Cap seam and its coal is being dumped on No. 1 tipple. I found all these mines well cared for, but the power producing ventilation is not sufficient.

Bloomington 1 and 2.—I found these mines well cared for. No. 1 had an overplus of air traveling, in No. 2 the current was well conducted, but the power was a little defficient.

Bloomington 3 and 4.—These mines are also well looked after, but being new there had been no furnaces built. When this is done there need be no excuse for a deficiency of ventilation.

Coaldale No. 3.—This is an extensive mine, but has been badly opened and is therefore much troubled with surface water during rain and thaws. This mine was idle at time of both visits to it, but it appeared to be in good condition for ventilation.

Coaldale No. 5.—This was once an extensive mine, but its shipments now do not exceed five hundred tons per day; the haulage is by endless rope system. I found the ventilation good here as a rule and the mine is well looked after.

Colorado Nos. 1 and 2.—I found both these mines in good shape in regard to ventilation and drainage.

Colorado No. 3.—This is a new opening working B coal. At the time of my visit a furnace was being built at the foot of a good shaft, so that there need be no difficulty in getting plenty of air. Water is plenty here too and a large Cameron pump has been put in.

Cook's Mines.—One of these mines is working bituminous coal and the other two cannel coal, one red ash cannel and the other white ash. The first named is evidently the same seam (C) as the bituminous, while the other is the B vein cannelized. I found both cannel coal mines with good ventilation, but the ventilation of the bituminous mine was bad. A second opening is required by the B cannel and bituminous mine, of which the operator was notified.

Cuba No. 1.—This is probably the first mine operated in this region and has been run by so many contractors that it is ruined. The ventilation, however, at time of visit was good, but the roads were in a deplorable condition.

Cuba Nos. 2 and 3.—Are two openings on the Cap seam over No. 1, the roof is shallow and soft so that it is hardly probable that much will ever be done here. The ventilation at time of visit was good from natural means.

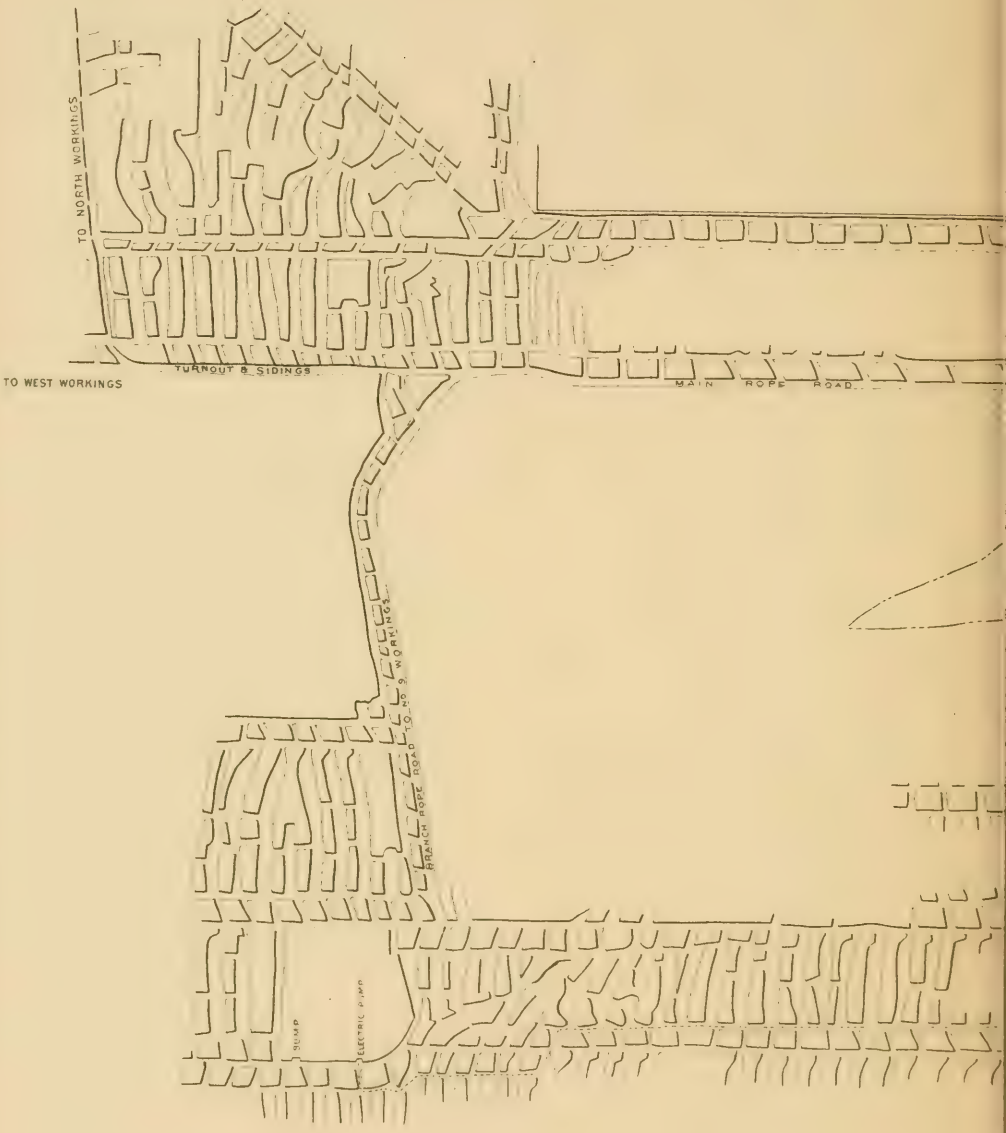
Derby.—From point of age and treatment the same may be said of this mine as of the Cuba. The ventilation here, however, at the time of visit was bad, I ordered a furnace put in and some doors and battices put up.

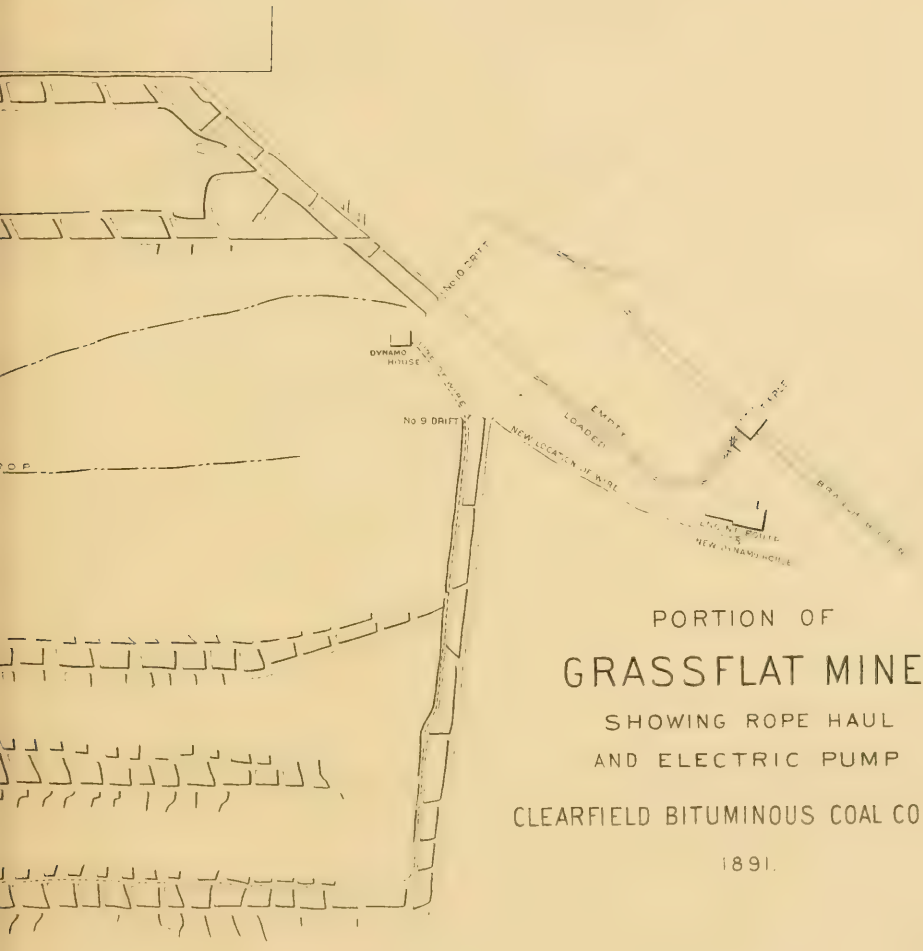
Decatur No. 1.—I failed to find this mine at work, was through it however and found that the current must be weak on account of the long drag. A new furnace, however, was ordered and the report since shows much better results.

Decatur No. 2.—This mine is nicely laid out, the headings as a rule are driven to their boundary line before any rooms are turned off. I caught the boss, however, as it were, sleeping; the current was misdirected for the want of a door, which he had neglected to put up; condition otherwise good.

Forest.—This mine is working B coal and was found in a good condition, both as regards ventilation and drainage.

Gazzam Nos. 1 and 4.—These mines were not examined during the last


TO NORTH WORKINGS
TO WEST WORKINGS
TURNOUT & SIDINGS
MAIN ROPE ROAD
BRANCH ROPE ROAD TO No. 9 WORKINGS
SUMP
ELECTRIC PUMP



PORTION OF

GRASSFLAT MINE

SHOWING ROPE HAUL

AND ELECTRIC PUMP

CLEARFIELD BITUMINOUS COAL COR'P'N.

1891.

four months of the year. The mine-boss reports, however, that the ventilation is plentiful.

Glenwood Nos. 1 and 2.—No. 1 works the D coal and No. 2 the E coal. Both these mines were found in good condition, the air is carried into the working places by means of canvas placed across the headings at intervals.

Gearhart.—This mine works the E coal over Lancashire No. 1. The mine is well planned for ventilation, but the return to the furnace was too small and crooked: it will serve, however, until a deeper furnace shaft is put down in face of present workings.

Guion.—This mine is working C vein and notwithstanding that there is a shaft about seventy feet in depth with a good furnace, I found the ventilation miserable; I called the mine-boss' and operators' attention to the matter.

Grass Flat.—These are extensive mines, working "B" coal. The haulage is by tail-rope system. These mines are usually well kept, but at the time of my visit I found the ventilation deficient in the working places. There is here, however, a ruinous system of ventilation, a mode that requires a door on each room, so that in a heading having twenty or thirty rooms some doors are necessarily open all the time. Drainage is well attended to here. There is an electric pump in use, which is described elsewhere.

Highland 1 and 2.—These mines are working some coal left in by Empire mines. Much of it is crop coal The ventilation here is dependent on the weather, there being no system, but holes are driven into the surface whenever required.

Jefferson.—This mine works the "E" coal over Glenwood No. 1, and although over-casts were put here for each pair of headings, the ventilation was bad on account of defective stoppings and brattices. There is no second opening put in yet. The operator, however, was notified to attend to this matter at once.

Kentuck.—I found this mine in very bad shape for ventilation, notwithstanding that there is a good opportunity for making a good mine, as the coal is good and thick. There is some trouble here, as mine-bosses do not remain long at the place.

Kyler.—I failed to find this mine at work on two occasions while in the vicinity, therefore I did not examine it.

Keystone.—There is a tram-road to this mine about a mile in length. There is now a locomotive for hauling the coal. The mine is new, and at the time of my visit was not developed much, nor has much been done since.

Lancashire No. 1.—This is an extensive mine, working about 170 miners. The ventilation is well conducted so far as carrying the current around is concerned, but there is no more than half the power necessary in the furnace. There is now another shaft being sunk where another furnace is expected to be put.

Lancashire No. 2.—Is a mine that sometimes worked with less than ten persons, and is dependent on the demands of trade. This mine, however, has a good furnace, and plenty of air could be had here. The system of work in both Lancashires is single heading, which, at best, is a poor system for ventilation.

Lender.—This mine has worked very irregularly. I failed to ascertain a day on which it was working. I did not examine it.

Montana.—This mine is nearly exhausted on the right side, but on the left a new drift has been opened to take out about thirty acres of coal. I found these mines well ventilated.

Morrisdale.—These mines consist of several drifts, each working a few men, with the coal all coming to one tipple. The coal, varies greatly in thickness here. In most places the roof is sand rock, and the soft, fire-clay bottom is taken up in order to have height for mules, and the consequence is that the roads are almost impassable. The ventilation, was rather deficient, but much work is being done that will better this condition.

Munson.—This mine has not done much work during the year. The coal being worked here is said to be the "B," but it may be the "C" instead; however, it is small and dirty. The mine has been very little developed and was in good condition when visited.

O'Shanter Nos. 1 and 2.—No. 1 mine, when first visited, was in a bad condition, there being nothing like the required quantity of air in circulation. It was somewhat improved on second visit, but much should be done here in order to bring the mine up to legal standard.

No. 2 mine had plenty of air for 200 men, while 12 to 15 was all there were employed therein. If these conditions could be reversed, so that the air from No. 2 could be given to No. 1, then all would have plenty.

Pardee Nos. 1 and 2.—This mine I found well cared for, and it was in good condition nothwithstanding many difficulties in shape of frequent and large faults to contend with. Hauling is by tail rope system and 500 to 600 tons are taken out daily. No. 2, like the above, is well looked after. The same mine-boss in charge at both with an assistant. No. 2, however, is free from faults and is worked perfectly square and straight. The ventilation in both these mines is good, as is also drainage. No. 2 has also a tail rope system and hauls daily from 1,200 to 1,500 tons.

Rothrock.—These mines consist of three openings. No. 1 has been run through the hill a distance of three-quarters of a mile. The coal is hauled by endless rope system. These mines are very much troubled by water, there being six pumps in operation, run by compressed air at the end of an air column 5,000 feet long. This power is very efficient for mine work, and can be used where steam is useless. This mine was idle when visited, but appeared to be well ventilated. What appeared to be a good territory of coal for No. 2 drift is a disappointment, for the coal is thrown to the surface all around by faults.

MAP OF

ELECTRIC MINE

T C HEIMS, OPERATOR

OSCEOLA MILLS, PENNSYLVANIA.

W S EDWARDS, MINE SUPT. P E WOMELSDORF, M E

"NOTE"

▪ OVERCASTS

· AIR CURRENTS.

Somerville Nos. 4 and 6 are two drifts delivering their coal to the same tipple. The vein worked here is the "B" in good shape. No. 4 was found well ventilated, except in one heading where the current was murky. No. 6 is a new drift not yet connected with No. 4. The coal is the same, but the roof here is very soft. It is proposed to ventilate this by a separate current from No. 4, but its furnace is not yet built.

Somerville No. 5 is opened on the other side of railroad track and is well planned for ventilation. The roof in much of this mine is bad, and its main heading has dipped until it cannot be driven further without a pump. Much of the coal here is unfortunately rusty or clayey.

Troy.—This is an extensive mine, producing 1,200 tons per day, which is hauled by a tail rope system around many and short curves. The engines of the plant are the most complete in the region. The ventilation of this mine is now produced by a twelve-foot fan. At the time of my visit the arrangements for conducting the air were not complete, the ventilation, therefore, was not as good as previous reports show.

Victor No. 1.—This mine I found in a bad condition throughout; ventilation was miserable, drainage deplorable, and the drift itself hardly fit for a dog to enter into, while the second opening was useless. But to the credit of the management, be it said, there is every effort being put forth to place the mine in a condition fit for men to work in.

Victor No 3.—But a few men are worked here, and there is plenty of air circulating to make it pleasant for them.

MINES OF OSCEOLA AND VICINITY.

Black Diamond.—This mine works the "B" coal near Sandy ridge where the coal measures of the Houtzdale basin crop out. I found the mine very poorly ventilated. I ordered the enlarging of the furnace which had been contracted by putting brick on the bars inside the arch. The stack also is to be lengthened.

Central.—On two visits to this mine I failed to find anybody about, it was therefore not examined during the latter part of the year.

Coal Run.—This is a small mine working crop coal, employing ten to twenty men. The roof and floor are exceedingly soft; places are being driven as narrow as possible. Ventilation is by means of holes punched into the surface. Several thousand tons of coal were gotten out in this manner.

Columbia No. 5.—I did not visit this mine; I therefore cannot make any report of it.

Drane.—Irregularity of working at this mine is the cause for having no report to make for it.

Electric.—This mine is working "B" coal. This mine clearly demonstrates the advantage of opening on proper principles. The current is divided into five splits; I measured the quantity passing through the

furnace without any fire and obtained 19,600 cubic feet, which quantity, lacking 920 cubic feet, I got in the various splits proportioned according to amount required in each. The mine is in first-class order.

Fulton.—On two occasions I found this mine deserted, I therefore made no examination.

Gehm.—This is a comparatively new mine, working the "B" coal, with prospects that it may become a good mine as regards attention to legal requirements.

Laurel Run.—This mine works the "D" coal; troubled much with faults. In one instance the displacement was such that the "E" vein came to the level and some four or five acres was worked thus. The mine was idle when visited. A new furnace shaft has been sunk in face of workings so that there is a very good chance for ventilation.

Logan.—Was not visited during last four months of the year.

Mapleton.—Was not visited during latter part of the year.

Pioneer.—This mine is working the "A" vein, or the lowest bed in these measures. The drift is below high water mark and there was no second opening. I therefore notified the operator to at once to make an escapement at a point beyond the reach of danger during high water. Ventilation fair.

Phœnix.—This mine is working "B" coal and furnishes the locomotives on Tyrone and Clearfield railroad with coal. The mine has been much abused by frequent changes in management. Ventilation at date of last visit was fair.

Retort.—This mine works the "A" vein, the lowest coal in this basin Much care is necessary to prepare this coal for market. I found a good current of air in the mine but it was much charged with powder smoke as considerable powder is being used here.

Reading Nos. 1 and 2.—No. 1 works "D" and is very much troubled with faults and rolls. The mine was badly ventilated, but may be made good with very little cost. No 2 works the "E" or cap seam, and has a very bad roof. Little will be done until smaller cars are used so that places can be driven narrow. Ventilation fair.

Washington.—This mine is working the cap seam over Victor No. 3. It is much troubled with breaks from fall of the Victor roof, affecting the whole strata of some thirty feet. Ventilation here was poor. The operators were notified to furnish material for bratticing, etc.

DESCRIPTION OF MINES IN THE HOUTZDALE DISTRICT.

Atlantic No. 2.—This mine was found in good condition. Over 41,000 cubic feet of air in circulation propelled by a fan and divided into fourteen splits, with a steady current in each, except in the fifth left heading where the velocity was too low. While the splitting process is a little overdone in this mine it demonstrates the possibility of running a mine without the use of doors on headings.

MAP OF

ATLANTIC No. 2 MINE

OPERATED BY

BERWIND-WHITE COAL MINING CO.

Wm POLLOCK, FOREMAN P. CAMERON, Sr ENG R

HOUTZDALE, PA. FEB 23 1892

Atlantic No. 1.—This is one of the most extensive mines in the region. The endless rope-system here is nearly a mile in length, worked on the English bogie system. I measured over 55,000 cubic feet of air passing through an eight-foot furnace here, but the working places were not ventilated, and there is hardly a possibility of doing so, for the air from Ocean No. 2 comes to this furnace by a shorter route, otherwise the mine is well cared for.

Ashland.—This is an old mine working crop coal. Ventilation is natural, obtained by putting holes into the surface. The mine has been worked on the single-heading system, so that to conduct a current of air would be difficult work. Ventilation, however, is ample for number of men at work, but the condition of the roads is deplorable. As the mine is nearly exhausted it is hardly worth while to insist on better drainage.

Bellevue.—This mine is working coal left years ago by the old Beaverton mine. The mine is in bad condition in all respects, having had so many different parties operating it, and each getting the cheapest possible coal out of it.

Bessemer.—This mine is working some coal left from the old Webster No. 2 with a few acres of other coal with shallow roof over it. On account of the system it is being worked on, in reaching for coal wherever it is possible to get it, the ventilation is necessarily bad.

Chester.—This mine was found in good condition, being ventilated by a ten-foot fan made by W. E. Cole, of Washington, Indiana, forcing a good quantity of air into the mine, and being well conducted through the workings. Much credit is due to the parties in charge for having this low vein mine in such a good condition.

Champion.—This mine has worked very little during the latter part of the year. I therefore failed to inspect it.

Eureka No. 8.—This mine is ventilated by a furnace with the main intake for air at face of main heading which runs into the crop. With this means of shortening the current good ventilation is furnished to working places. A few overcasts are also used here which aid in furnishing a steady current of air.

Eureka No. 2.—This mine is working entirely on pillars. It was opened on a good system for ventilation, which accounts for its good condition in that respect, notwithstanding that large volumes of "black-damp" are given off from falls. The provision for drainage was not so well attended to and the consequence is that the roads are in bad condition.

Eureka No. 7.—This is a new shaft mine located at Ramey, reaching the "D" vein in two members, separated by about seventeen inches of rock, at a depth of 127 feet. The arrangement for hoisting is very complete, and it promises to be an extensive mine. The second opening is also complete, being partitioned off with one side for air-way and the

other fitted with good stairs for traveling in case of accident to hoisting shaft. A fan is used for ventilating.

Eureka No. 5.—This is a slope mine 3,000 feet long. Much water has been and is still encountered here. Two large Cameron pumps are kept in use. The ventilation is by fan power and is ample. 16,000 cubic feet were measured at face of main heading. Drainage is also well attended to.

Eureka No 9.—This is a new slope opening opposite No. 8. Has not yet come under the provisions of the law, and when more than nine men are employed it may be connected in such a way with No. 8 that one man may attend to both mines.

Excelsior No. 4.—This mine has been, and is still much troubled by faults which are many and large. There has been more rock taken out of this mine than any dozen others in the region. The ventilation was fair at time of visit, but may be much improved by the use of an overcast.

Ferndale.—This is a small mine, working 15 to 20 men. I measured 5,000 cubic feet of air circulated by natural means. The working places, however, did not share much in this quantity. Drainage, like ventilation is natural, and is much affected by rains.

Loraine.—This mine is now nearly exhausted. Considerable good coal has been lost here, and the mine much abused by the pernicious system of some superintendents in changing their mine-bosses. The ventilation here is natural, and at time of visit sufficient, except in a few places.

Mount Vernon No. 5.—This mine formerly known as West Moshannon, has been for years and is yet an extensive mine. Haulage is by tail-rope system nearly a mile in length. The ventilation is by furnace with a shaft about 75 feet in depth. The mine was well ventilated, when visited.

Mount Vernon No. 6.—This is a shaft mine 175 feet deep, fitted with the safety equipments required by law. The second opening is not completed. Ventilation is by exhaust steam from pumps at foot of shaft, which is, however, not sufficient.

Muddy Run.—This is a new mine, now known as Eureka No. 12. When visited it had no rooms working. There was a current of 13,000 cubic feet traveling through the headings. The coal here is low, about 3 feet thick.

Mabel.—This mine is working the "D" vein about 2′ 10″ in thickness. The air-courses were found far behind. The furnace is a very crude affair, and there was no second opening, of which state of affairs the company was notified.

Ocean No. 1.—This, once the most extensive mine in the region, is now nearly exhausted. In its palmy days 33,000 tons per month have been shipped. Thousands of tons of valuable coal are being lost on account of the bad system on which the mine was opened and worked, and the men who are now drawing pillars are suffering from the great quan-

tity of "black-damp" given off, with no way of conducting a current wherewith to dilute it; the heading being single and often rooms turned off both sides.

Ocean No. 2.—This is a shaft mine, working on same current of air as Atlantic No. 1. There being but one furnace for both places I notified the manager of the necessity of a separate current for these mines, and there is now a furnace in each. The ventilation at time of two visits paid this mine was bad, but there is no reason why it should not be much improved now.

Pacific No. 1.—This once extensive mine is now being rapidly exhausted. The ventilation is as good as can reasonably be expected, considering that it was opened on wrong principles for the proper conducting of air currents.

Queen No. 1.—This is a small mine working "D" vein in a depressed condition. I found the ventilation good. The escapement drift was in bad shape, and there was no mine-boss in charge. The operators were notified of this fact, and there is now a boss in charge.

Queen No. 2.—This is similar to No. 1, above mentioned, and owned partly by the same parties. I found twelve men working without the services of a mine-boss. I notified the owners to either employ a mine-boss or reduce their force to less than ten persons, which was done.

Ramey.—I found this mine in good condition, both as regards ventilation and drainage, notwithstanding that the coal is low, and that it must have cost much money to place it in such condition.

Shoff.—This mine works the "D" coal chiefly under sand rock roof, which being frail, it breaks and makes it a dangerous top to work under and also makes a large area of the coal unfit for market on account of the clay working through the breaks into the coal. The ventilation, on both visits, was found deficient on account of there being too many doors in use. Had occasion to notify the men of this mine to use the black-board for ordering their timber; previous to this the miners selected and carried their own timber.

Staffordshire.—This mine is working the "B" vein in a fair condition. I found here a very treacherous roof, but the mine-boss is careful and is particular about furnishing timber for his men. Ventilation was good, except in a couple of advance places.

Sterling No. 1.—Was not examined during the last four months of the year.

Sterling No. 2.—Was not examined during last four months of the year.

Sterling No. 7.—This mine is working coal near the crop and is troubled with faults and clay veins. The bottom here is very soft and the roads are muddy in consequence. The ventilation, too, was found bad. Suggestions were given for bettering these conditions.

Webster No. 4.—This mine I found in bad condition, both as regards ventilation and drainage. There are two places or things at the foot of two holes from the surface which the management call furnaces, but it would require the imagination of an Edgar Poe to make anything other than a pile of stone, old brick and pieces of scrap iron out of the heap of débris I found heated for the purpose of rarifying the air. The drainage was also in deplorable condition.

TABLE I—*Showing Location, &c., of Collieries in the Eighth Bituminous Mine District.*

NAME OF COLLIERY.	Name of Operator.	Location—County.	Name of Superintendent.	Postoffice Address.
Acme	John Walton	Clearfield	John Walton	Philipsburg, Centre county.
Alexander	Thomas Blyth & Co.	do.	Thomas Blyth	Madera, Clearfield county.
Atlantic No. 1	B. W. Coal Mining Company	do.	W. A. Crist	Osceola Mills, Clearfield county.
Atlantic No. 2	do. do.	do.	do.	do. do.
Ashland	A. P. Isenberg	do.	A. P. Isenberg	Houtzdale, Clearfield county.
Baltic Nos. 1, 2 and 3	Baltic Coal Company	do.	J. H. Riley	Philipsburg, Centre county.
Belvern	H. K. Myers	do.	Robert Whitehead	Houtzdale, Clearfield county.
Benedick	E. P. Reed	Huntingdon	W. S. Reed	Dudley, Huntingdon county.
Bessemer	Henry Liveright	Centre	Henry Liveright	Osceola Mills, Clearfield county.
Black Diamond	Robert A. Jackson	do.	Robert Jackson, Jr.	Powelton, Centre county.
Brittanic	Mortimer & Co.	Clearfield	George Rees	Karthaus, Clearfield county.
Brown	Sweet & Brown	Bedford	William H. Sweet	Saxton, Bedford county.
Bloomington Nos. 1 and 4	Bloomington Mining Company	Clearfield	John Dunsmore	Glenrickey, Clearfield county.
Cambria	The United Collieries Company	Bedford	James Denithorne	Huntingdon, Huntingdon county.
Cataract	B. W. Coal Mining Company	Clearfield	A. J. Cook	Bellefonte, Centre county.
Central	Thomas C. Heims	Centre	Thomas C. Heims	Osceola Mills, Clearfield county.
Champion	Reed, Good & Co.	Clearfield	John Reed	Houtzdale, Clearfield county.
Chester	Moshannon Vein Coal Mining Company	do.	P. B. Zentmyer	Madera, Clearfield county.
Coal Run	Coal Run Coal Company	do.	Thomas Young	Philipsburg, Centre county.
Coaldale Nos. 3 and 5	Coaldale Coal Company	do.	James R. Fleming	do. do.
Coaldale No. 4	John Walton	do.	John Walton	do. do.
Crescent	Lambirth Coal Mining Company	Bedford	John Langdon	Hopewell, Bedford county.
Chevington	do. do.	do.	do.	do. do.
Colorado	Jackman & Ellsworth	Clearfield	Thomas R. Pilkington	Philipsburg, Centre county.
Columbia No. 3	J. L. Mitchell	do.	M. B. Courtright	Madera, Clearfield county.
Columbia No. 5	do.	do.	B. F. Smith	Osceola Mills, Clearfield county.
Cumberland	H. and B. T. M. R. R. and Coal Company	Bedford	John Langdon	Hopewell, Bedford county.
Cunard	John E. Thropp	do.	Thomas A. Jones	Kearney, Bedford county.
Decatur Nos. 1 and 2	John Nuttall & Co.	Clearfield	George W. McGaffey	Philipsburg, Centre county.
Derby	Thomas Barnes & Bro.	do.	Thomas Barnes	do. do.
Drane	Thomas C. Heims	do.	Thomas C. Heims	Osceola Mills, Clearfield county.
Electric	do.	do.	do. do.	do. do.
Eureka No. 2	B. W. Coal Mining Company	do.	W. A. Crist	do. do.
Eureka Nos. 5 and 6	do. do.	do.	do.	do. do.
Eureka No. 7	do. do.	do.	do.	do. do.
Eureka No. 8	do. do.	do.	do.	do. do.
Eureka No. 9	do. do.	do.	do.	do. do.
Eureka No. 12	do. do.	do.	do.	do. do.
Excelsior	do. do.	do.	do.	do. do.
Ferndale	John Maurice & Son	do.	John Maurice	Brisbin, Clearfield county.
Fisher	E. Eichelberger & Co.	Huntingdon	E. Eichelberger	Saxton, Bedford county.
Forest	John Walton	Clearfield	John Walton	Philipsburg, Centre county.
Franklin	B. W. Coal Mining Company	do.	W. A. Crist	Osceola Mills, Clearfield county.
Fulton	Liveright, McCoy & Co.	do.	Henry Liveright	do. do.
Glenwood Nos. 1 and 2	Williams, Morris & Co.	do.	John M. Campbell	Philipsburg, Centre county.
Gazzam Nos. 1 and 4	Clearfield Bituminous Coal Corporation	do.	Robert A. Shillingford	Peale, Clearfield county.
Grassflat	do. do. do.	do.	do. do.	do. do.

TABLE I—*Continued.*

NAME OF COLLIERY.	Name of Operator.	Location—County.	Name of Superintendent.	Postoffice Address.
Ghem	Ghem Coal Company	Centre	G. M. H. Good	Osceola Mills, Clearfield county.
Guion	Sanford & Duncan	Clearfield	J. L. Nicholson	Philipsburg, Centre county.
Hicks	A. H. & A. G. Hicks	Huntingdon	A. G. Hicks	Coalmont, Huntingdon county.
Highland	John Walton	Clearfield	John Walton	Philipsburg, Centre county.
Huntingdon	E. F. Gould	Huntingdon	E. F. Gould	Dudley, Huntingdon county.
Jefferson	Adams & Co.	Clearfield	D. H. Campbell	Philipsburg, Centre county.
Karthaus	B. W. Coal Mining Company	do.	A. J. Cook	Bellefonte, Centre county.
Kentuck	Thomas & Co.	do.	E. McCormick	Philipsburg, Centre county.
Kecks	Woodland Cannel Coal Company	do.	H. S. Overly	Woodland, Clearfield county.
Kearney	Joseph E. Thropp	Bedford	Thomas A. Jones	Kearney, Bedford county.
Knox	Clearfield Bituminous Coal Corporation	Clearfield	Robert A. Shillingford	Peale, Clearfield county.
Kyler	R. C. Fishburn	do.	R. C. Fishburn	Munson's Station, Clearfield county.
Lancashire Nos. 1 and 3	Thomas Barnes & Bro.	do.	Thomas Barnes	Philipsburg, Centre county.
Laurel Run	Josiah M. Bacon	do.	George W. McGaffey	do. do.
Logan	Henry Liveright	do.	Henry Liveright	Osceola Mills, Clearfield county.
Loraine	Reakirt Brothers Company	do.	George Gould	Brisbin, Clearfield county.
Lueder slope	Lueder & Co.	do.	G. W. Lueder	Munson's Station, Clearfield county
Mabel	Thomas Blyth & Co.	do.	Thomas Blyth	Madera, Clearfield county.
Mapleton	Henry Liveright	do.	Henry Liveright	Osceola Mills, Clearfield county.
Montana	J. Swires & Co.	do.	Jacob Swires	Philipsburg, Centre county.
Morgan	Henry Liveright	do.	Henry Liveright	Osceola Mills, Clearfield county.
Morrisdale	R. B. Wigdon & Sons	do.	Charles E. Sharpless	Philipsburg, Centre county.
Mount Equity	Kemble Iron Company	Bedford	William Lander	Riddlesburg, Bedford county.
Mount Vernon No. 5	The United Collieries Company	Clearfield	James Denithorne	Huntingdon, Huntingdon county.
Mount Vernon No. 6	do. do.	do.	do.	do. do.
Munson	Munson Coal Company	Centre	R. E. Munson	Philipsburg, Centre county.
O'Shanter	Beech Creek Cannel Coal Company	Clearfield	Kerr & Weaver, contractors	Clearfield, Clearfield county.
Ocean Nos. 1 and 2	W. H. Sweet	Huntingdon	W. H. Sweet	Saxton, Bedford county.
Ocean Nos. 1 and 2	B. W. Coal Mining Company	Clearfield	W. A. Crist	Osceola Mills, Clearfield county.
Ocean No. 3	John B. Reed	do.	John B. Reed	Houtzdale, Clearfield county.
Pacific No. 1	B. W. Coal Mining Company	do.	W. A. Crist	Osceola Mills, Clearfield county.
Pardee Nos. 1, 2 and 3	George J. Magee	do	W. C. Lingle	Philipsburg, Centre county.
Pioneer	Henry Liveright	Centre	Henry Liveright	Osceola Mills, Clearfield county.
Phœnix	do.	do.	do.	do. do.
Ramey	Thomas Barnes & Co.	Clearfield	Thomas Barnes	Philipsburg, Centre county.
Reading	Penn Iron Company	do.	James P. Hale	do. do.
Retort	Blair Brothers	Centre	L. B. Blair	Tyrone, Blair county.
Robertsdale	Rockhill Iron and Coal Company	Huntingdon	A. W. Sims	Rockhill Furnace, Huntingdon county.
Rothrock	R. B. Wigdon & Sons	Clearfield	Charles E. Sharpless	Philipsburg, Centre county.
Sommerville Nos. 4 and 5	Sommerville & Buchanan	do.	J. S. Sommerville	Winburne, Clearfield county.
Staffordshire	Thomas Barnes & Co.	do.	Thomas Barnes	Philipsburg, Centre county.
Sterling Nos. 1 and 7	Sterling Coal Company	do.	Thomas E. McHugh	Houtzdale, Clearfield county.
Sterling No. 2	Leonard & Craig	do.	Frank Craig	Brisbin, Clearfield county.
Shoff	R. B. Wigdon & Sons	do.	Charles E. Sharpless	Philipsburg, Centre county.
Troy	do. do.	do.	do. do.	do. do.
Tunnel	Clearfield Bituminous Coal Corporation	Centre	Robert A. Shillingford	Peale, Clearfield county.

Tunnel (cannel coal),	J. W. Cooke,	Clearfield,	H. T. Cooke,	Woodland, Clearfield county.
Tunnel (bituminous),	do.	do.	do.	do.
Victor Nos. 1, 2 and 3,	Bloomington Mining Company,	do.	Alexander Dunsmore,	Philipsburg, Centre county.
Washington,	Thomas & Co.,	do.	D. H. Campbell,	do.
Webster No. 4,	Beulah Coal Company,	do.	James H. Minds,	Ramey, Clearfield county.
Woodland Cannel,	J. W. Cooke,	do.	J. W. Cooke	Bellefonte, Centre county.
Woodvale shaft,	Rockhill Iron and Coal Company,	Huntingdon,	A. W. Sims,	Rockhill Furnace, Huntingdon county.

TABLE II—*Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Eighth Bituminous Mine District for the year ending December 31, 1891.*

NAME OF COLLIERIES.	Location—County.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs of powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives and stationary engines.	Number coke ovens.
Acme	Clearfield	16,935		16,935	154	37				1	5	1	
Alexander	do.	17,419		17,419	146	50			115				
Atlantic No. 1	do.	264,354		264,354	255	317	1	4	558	4	35	3	
Atlantic No. 2	do.	193,728		193,728	247	194			557	6	16	3	
Ashland	do.	22,625		22,623	202	41					6		
Baltic Nos. 1, 2 and 3	do.	123,371		123,371	236	205	1	1	580		19		
Belvern	do.	39,369		39,369	240	91			300	1	6		
Benedick	Huntingdon	20,000		20,000	206	44			200		2		
Bessemer	Clearfield	14,530		14,530	165	32			52		5		
Black Diamond	Centre	24,284		24,284	170	57			115	1	8	2	
Brittanie	Clearfield	22,000		22,000	280	27					4		
Brown	Bedford	88,773		88,773	200	153		5	400	1	18	1	
Bloomington No. 1	Clearfield	11,105		11,105	223	16			93		1		
Bloomington No. 2	do.	93,757		93,757	224	112			762	1	7	1	
Bloomington No. 3	do.	74,029		74,029	254	134		1	648		6		
Bloomington No. 4	do.	4,400		4,400	142	14			46		1		
Cambria	Bedford	66,466		66,466	281	135			300	1	11	1	
Cataract	Clearfield	80,150		80,150	180	145		2	846		28		
Central	Centre	22,126		22,126	149	61			102		4		
Champion	Clearfield	11,000		11,000	90	46					3		
Chester	do.	54,000		54,000	150	116			250	2	5		
Coal Run	do.	14,102		14,102	200	23			30		2		
Coaldale No. 3	do.	168,998		168,998	211	284	1		905	5	13	2	
Coaldale No. 4	do.	16,794		16,794	179	10					2		
Coaldale No. 5	do.	154,519		154,519	230	214			806	3	21	2	
Crescent	Bedford	96,515		96,515	274	126		1	400	1	13	1	
Chevington	do.	23,704		23,704	277	63			80		3		
Colorado	Clearfield	103,276		103,276	275	118		2	600		18		

Columbia No. 3,	do.	19,618		19,618	148	41			65		5					
Columbia No. 5,	do.	29,579		29,579	177	102		1	170		7					
Cumberland,	Bedford,	55,340		55,340	208	119	1		12	1	11					
Cunard,	do.	4,398	2,464	780	103	26			9		2			18		
Decatur No. 1,	Clearfield,	91,416		91,416	196	127		2			8					
Decatur No. 2,	do.	35,320		35,320	200	44					2					
Derby,	do.	59,936		59,936	242	60			600		7					
Drane,	do.	46,994		46,994	235	56		1	180		6					
Electric,	Centre,	41,015		41,015	256	74			130		6					
Eureka No. 2,	Clearfield,	190,579		190,579	264	174		6	553		36					
Eureka Nos. 5 and 6,	do.	163,689		163,689	276½	165		3	683	7	25		5			
Eureka No. 7,	do.	10,326		10,326	68½	49			31	2	4		2			
Eureka No. 8,	do.	139,917		139,917	266½	129	1	3	569		16					
Eureka No. 9,	do.	4,899		4,899	52	45			29	3	3		2			
Eureka No. 12,	do.	5,027		5,027	64	28			25		2					
Excelsior No. 4,	do.	38,856		38,856	268½	41		5	236		6					
Ferndale,	do.	16,361		16,361	126	29					4					
Fisher,	Huntingdon,	5,538		5,538	120	34			120		4					
Forest,	Clearfield,	89,723		89,723	287	121	2	4			5					
Franklin,	do.	24,180		24,180	218	31		1	18		13		1	1		
Fulton,	do.	19,682		19,682	221	32		2	135	1	3					
Glenwood Nos. 1 and 2,	do.	87,272		87,272	219	111			388		10					
Gazzam No. 1,	do.	94,853		93,667	276½	153		2	1,222	1	12½		8	1		
													1	1		
Gazzam No. 4,	do.	21,873		21,737	245½	40			306		2					
Grass Flat,	do.	174,620	42,622	173,332	301	265		2	1,238	3	22		2	100		
Ghem,	Centre,	5,927		5,927	132	16			42		2					
Guion,	Clearfield,	38,136		38,136	200	66			200		6					
Hicks,	Huntingdon,	2,900		2,900	80	9					1					
Highland,	Clearfield,	30,564		30,564	252	45				1	5		1			
Huntingdon,	Huntingdon,	23,254		22,768	170	49			100		6					
Jefferson,	Clearfield,	10,687		10,687	125	49					3					
Karthaus,	do.	46,345		46,345	280	80			150		13					
Kentuck,	do.	25,100		25,100	230	54					4					
Keeks,	do.	4,820		4,820	90	21					2					
Kearney,	Bedford,	34,997	21,575	5,168	130	133		2	178		9			110		
Knox,	Clearfield,	688		688	24	14			5							
Kyler,	do.	57,234	10,578	41,462	215	85		1	498	1	10		1	50		
Lancashire No. 1,	do.	87,664		87,664	219	175			780		22					
Lancashire No. 2,	do.	39,640		39,640	185	58			400		6					
Lancashire No. 3,	do.	3,920		3,920	150	9			40		1					
Laurel Run,	do.	62,103		62,103	256	77		1			6					
Logan,	do.	45,350		45,350	237	63		1	195		16					
Loraine,	do.	25,296		25,296	119	37					2					
Lueder slope,	do.	17,959		19,959	200	45		1	200	2	3		1			
Mabel,	do.	9,340		9,340	119	43		1	90		2					
Mapleton,	do.	29,009		29,009	176	43		1	168		7					
Montana,	do.	69,440		69,440	225	119		2	480		12					
Morgan,	do.	8,191		8,191	224	20			25		2					
Morrisdale,	do.	49,056	20,670		147	89			515	2	8		1	106		
Mt. Equity,	Bedford,	43,344	17,720	7,652	191	116			32		18			88		
Mt. Vernon No. 5,	Clearfield,	118,598		118,598	270	140		5	300	2	14		1			
Mt. Vernon No. 6,	do.	26,238		26,238	164	57			200	2	3		1			
Munson,	Centre,	8,547		8,547	204	30			127		3					
O'Shanter,	Clearfield,	88,270		88,270	240	132		2	503		7					
Ocean No. 1,	Huntingdon,	35,560		35,560	240	67			300		5					
Ocean No. 2,	do.	24,501		24,501	240	52			200		5					

TABLE II—*Continued.*

NAMES OF COLLIERIES.	Location—County.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives and stationary engines.	Number coke ovens.
Ocean No. 1,	Clearfield,	83,963	.....	83,963	246	87	...	...	.....	...	15	...	...
Ocean No. 2,	do.	151,526	.....	147,571	244½	203	2	3	.....	5	30	3	...
Ocean No. 3,	do.	34,654	.....	34,654	156	54	...	1	.....	...	4	...	...
Pacific No. 1,	do.	136,531	.....	136,531	249	121	2	5	.....	...	23	...	...
Pardee No. 1,	do.	71,252	.....	71,252	156	136	1	2	439	4	14	2	...
Pardee No. 2	do.	237,303	.....	237,303	234	324	...	...	978	2	20	1	...
Pardee No. 3,	do.	18,818	.....	18,818	237	24	...	...	50	...	2	...	...
Pioneer,	do.	6,215	.....	6,215	142	15	...	...	64	...	2	...	...
Phœnix,	Centre,	14,565	.....	14,565	153	39	...	...	60	...	4	...	...
Ramey,	Clearfield,	34,876	.....	34,876	158	70	...	...	350	...	5	...	...
Reading,	do.	4,480	.....	4,480	51	44	...	...	30	...	4	...	...
Retort,	Centre,	45,000	.....	40,000	250	61	...	...	500	...	5	...	...
Robertsdale,	Huntingdon,	153,086	*	.....	254	293	...	...	1,440	10	32	2	132
Rothrock,	Clearfield,	127,232	.....	127,232	161	222	...	1	950	3	11	3	...
Sommerville No. 4,	do.	93,708	.....	93,708	216	133	...	...	.....	...	5	...	...
Sommerville No. 5,	do.	54,925	.....	54,925	208	73	...	1	.....	...	3	...	...
Staffordshire,	do.	71,176	.....	71,176	220	110	...	1	720	...	5	...	...
Sterling No. 1,	do.	161,725	.....	143,038	278	189	...	4	1,000	1	18	L., 1	...
Sterling No. 2,	do.	31,360	.....	31,360	219	34	...	...	140	...	6	...	...
Sterling No. 7,	do.	85,034	.....	85,034	264	105	...	...	.....	1	8	1	...
Shoff,	do.	125,328	.....	125,328	278	161	...	...	340	...	11	...	...
Troy,	do.	272,160	.....	272,160	260	301	2	2	1,600	1	15	1	...
Tunnel,	Centre,	19,396	.....	19,396	244	20	...	...	338	...	2	...	...
Tunnel (cannel),	Clearfield,	3,946	.....	3,714	54	18	...	...	.....	...	1	...	...
Tunnel (bituminous),	do.	3,472	.....	3,472	75	15	...	...	50	...	1	...	...
Victor No. 1,	do.	75,107	.....	75,107	220	94	...	1	300	...	11	L., 1	...
Victor No. 2,	do.	6,527	.....	6,527	100	10	...	...	30	...	1	...	...
Victor No. 3,	do.	19,100	.....	19,100	161	21	...	...	90	...	2	...	...
Washington,	do.	47,250	.....	47,250	240	68	...	1	.....	...	3	...	...
Webster No. 4,	do.	102,329	.....	102,329	244	140	...	2	500	1	12	1	...
Woodland (cannel),	do.	23,000	.....	22,655	278	45	...	...	.....	...	6	...	...
Woodvale shaft,	Huntingdon,	13,299	†	.....	308	49	1	1	360	6	4	2	...
Total,		6,669,159	115,629	6,340,787	23,167½	10,215	14	93	31,561	89	983	51	554

* Coked and consumed by the parties themselves.

† Consumed by producers

TABLE III.—*Showing the number of each Class of Employes at each Colliery in the Eighth Bituminous Mine District during the year 1891.*

NAMES OF COLLIERIES.	Location County.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.						Grand totals inside and outside.
		Inside foreman or mine-boss.	Miners.	Miners' boys.	All company men.	Drivers and runners.	Doorboys and helpers.	Total inside.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All company men.	Superintendents, book-keepers and clerks.	Total outside.	
Acme,	Clearfield,	1	27	. . .	1	4	1	34	. . .	1	. . .	2	1	4	38
Alexander,	do.	1	34	9	. . .	3	. . .	47	. . .	. . .	. . .	2	. . .	2	49
Atlantic No. 1,	do.	1	243	17	12	20	14	307	2	3	. . .	3	3	11	318
Atlantic No. 2,	do.	1	157	13	6	6	. . .	183	2	2	. . .	5	2	11	194
Ashland,	do.	1	30	5	1	4	. . .	41	. . .	. . .	. . .	1	. . .	1	42
Baltic Nos. 1, 2 and 3,	do.	1	155	25	2	10	4	197	1	. . .	. . .	5	1	7	204
Belvern,	do.	1	60	10	10	4	3	88	1	. . .	. . .	2	1	4	92
Benedick,	Huntingdon,	1	28	7	. . .	2	. . .	38	. . .	. . .	. . .	4	3	7	45
Bessemer,	Clearfield,	1	22	3	1	4	. . .	31	1	. . .	. . .	. . .	1	2	33
Black Diamond,	Centre,	1	40	5	3	4	2	55	1	. . .	. . .	1	1	3	58
Brittanic,	Clearfield,	1	20	1	1	3	1	27	. . .	. . .	. . .	1	. . .	1	28
Brown,	Bedford,	1	120	25	2	15	2	165	2	. . .	. . .	5	2	9	174
Bloomington No. 1,	Clearfield,	. . .	14	. . .	. . .	1	. . .	15	. . .	. . .	. . .	1	. . .	1	16
Bloomington No. 2,	do.	1	85	5	2	7	3	103	1	. . .	. . .	7	2	10	113
Bloomington No. 3,	do.	1	103	7	3	6	2	122	2	. . .	. . .	10	1	13	135
Bloomington No. 4,	do.	. . .	12	. . .	. . .	1	. . .	13	. . .	. . .	. . .	1	. . .	1	14
Cambria,	Bedford,	1	99	10	6	7	3	126	1	. . .	. . .	3	4	8	134
Cataract,	Clearfield,	1	105	6	6	11	4	135	2	. . .	. . .	8	3	13	146
Central,	Centre,	1	45	5	1	4	1	57	1	. . .	. . .	2	2	5	62
Champion,	Clearfield,	1	30	10	1	3	1	46	. . .	. . .	. . .	1	. . .	1	47
Chester,	do.	1	90	10	2	6	2	111	1	. . .	. . .	3	2	6	117
Coal Run,	do.	1	15	3	3	1	1	24	. . .	. . .	. . .	2	. . .	2	26
Coaldale No. 3,	do.	1	225	17	4	17	4	268	4	. . .	. . .	11	2	17	285
Coaldale No. 4,	do.	. . .	9	. . .	. . .	. . .	. . .	9	. . .	. . .	. . .	1	. . .	1	10
Coaldale No. 5,	do.	1	150	22	3	18	7	201	3	. . .	. . .	9	2	14	215
Crescent,	Bedford,	1	97	3	3	9	6	119	1	1	. . .	4	2	8	127
Chevington,	do.	1	35	. . .	1	3	1	41	1	. . .	. . .	2	. . .	3	44
Colorado,	Clearfield,	1	73	23	3	12	2	114	1	. . .	. . .	4	. . .	5	119
Columbia No 3,	do.	1	30	4	1	2	2	40	1	. . .	. . .	1	. . .	2	42
Columbia No. 5,	do.	1	84	4	1	5	3	98	1	. . .	. . .	4	. . .	5	103

TABLE III—*Continued.*

NAMES OF COLLIERIES.	Location—County.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.						Grand totals inside and outside.
		Inside foreman or mine-boss.	Miners.	Miners' boys.	All company men.	Drivers and runners.	Doorboys and helpers.	Total inside.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All company men.	Superintendents, book-keepers and clerks.	Total outside.	
Cumberland	Bedford	1	90	6	3	10	3	113	1			5	1	7	120
Cunard	do.	1	15		1	2		19			8			8	27
Decatur No. 1	Clearfield	1	85	14	2	8	6	116	2			8	2	12	128
Decatur No. 2	do.	1	32	3	2	2	1	41	1			2	1	4	45
Derby	do.	1	40	8	1	5	2	57	1			3	2	6	63
Drane	do.	1	40	4	1	3		51	1			3	2	6	57
Electric	Centre	1	58	7	1	2	2	69	1			3	2	6	75
Eureka No. 2	Clearfield	1	105	45	5	10	2	168	1			4	2	7	175
Eureka Nos. 5 and 6	do.	1	117	15	2	5	2	156	3	2		3	2	10	166
Eureka No. 7	do.	1	35	2	2	2		42	1			3	2	8	50
Eureka No. 8	do.	1	90	16	2	11	2	122	1			5	2	8	130
Eureka No. 9	do.	1	38	1	1	2		43	1	2		1	1	5	48
Eureka No. 12	do.		16	3	1	1		21	1				1	2	23
Excelsior No. 4	do.	1	31	1	1	2	1	37	1			2	1	4	41
Ferndale	do.	1	20	4		3		28					1	1	29
Fisher	Huntingdon	1	28	1		3		33	1				1	2	35
Forest	Clearfield	1	100	4	2	4	1	112	1			2	2	10	122
Franklin	do.	1	17	2	1	2	2	25	1			2	2	6	31
Fulton	do.	1	20	5	2	2		30	1			1	1	3	33
Glenwood Nos. 1 and 2	do.	1	95		2	6		104	1			4	3	8	112
Gazzam No. 1	do.	1	107	6	6	10	6	136	3	3		10	2	18	154
Gazzam No. 4	do.	1	29	2	3	2	1	38	1			2		3	41
Grassflat	do.	1	195	8	21	15	8	248	3	2		10	3	18	266
Ghem	Centre	1	10	1	2	2		16				1	1	2	18
Guion	Clearfield	1	52	2		3	2	60	1			4	2	7	67
Hicks	Huntingdon		9					9							9
Highland	Clearfield	1	30	3	2	4		40	1	1		2	2	6	46
Huntingdon	Huntingdon	1	35	5		4		45	1			2	1	4	49
Jefferson	Clearfield	1	38	4	1	2	1	47				1	2	3	50
Karthaus	do.	1	56	4	4	5	1	71	1			8	1	10	81
Kentuck	do.	1	45	2	1	4		53				2		2	55
Kecks	do.	1	14	2		1		18							22

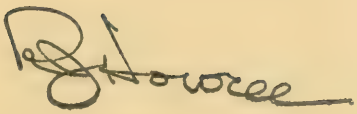
Kearney	Bedford	1	72	8	2	6	3	92	2	...	30	8	2	42	134
Knox	Clearfield	1	12	...	1	1	...	15	...	...	...	...	...	...	15
Kyler	do.	1	57	2	3	5	2	70	1	...	7	6	2	16	86
Lancashire No. 1	do.	1	125	25	3	9	5	168	2	...	...	4	2	8	176
Lancashire No. 2	do.	1	40	8	1	4	2	56	1	...	...	2	...	3	59
Lancashire No. 3	do.	...	7	...	...	1	...	8	...	...	...	1	...	1	9
Laurel Run	do.	1	53	7	2	4	2	69	1	...	...	5	2	8	77
Logan	do.	1	44	6	2	6	1	60	1	...	...	2	1	4	64
Loraine	do.	1	30	5	...	2	...	38	...	...	...	...	...	...	38
Leuder	do.	1	30	5	1	2	1	40	1	1	...	3	1	6	46
Mabel	do.	1	35	4	1	2	...	43	...	...	...	1	...	1	44
Mapleton	do.	1	30	6	...	3	1	41	1	...	...	1	1	3	44
Montana	do.	1	75	20	5	10	3	114	1	...	...	4	1	6	120
Morgan	do.	...	10	2	3	2	...	17	1	...	...	1	1	3	20
Morrisdale	do.	1	72	5	2	4	...	84	1	...	...	4	1	6	90
Mt. Equity	Bedford	1	46	12	4	11	4	78	2	...	32	4	1	39	117
Mt. Vernon No. 5	Clearfield	1	102	15	3	9	2	132	2	1	...	5	2	10	142
Mt. Vernon No. 6	do.	1	40	...	6	2	1	50	1	1	...	4	1	7	57
Munson	Centre	1	20	2	1	2	1	27	1	...	...	1	1	3	30
O'Shanter	Clearfield	1	100	12	2	7	4	126	1	...	...	5	1	7	133
Ocean No. 1	Huntingdon	1	50	10	...	5	...	66	1	...	...	...	1	2	68
Ocean No. 2	do.	...	38	7	...	4	...	49	1	...	...	1	1	3	52
Ocean No. 1	Clearfield	1	62	7	2	7	1	80	1	...	...	4	3	8	88
Ocean No. 2	do.	1	155	10	6	14	6	192	3	2	...	6	2	12	204
Ocean No. 3	do.	1	40	8	...	3	1	53	1	...	...	1	...	2	55
Pacific	do.	1	80	16	3	9	3	112	1	...	...	7	2	10	122
Pardee No. 1	do.	1	89	18	2	10	5	125	1	1	...	8	2	12	137
Pardee No. 2	do.	1	237	42	4	16	9	309	2	1	...	11	2	16	325
Pardee No. 3	do.	1	20	...	...	2	1	24	...	...	...	...	1	1	25
Pioneer	do.	...	11	1	...	1	1	14	...	...	...	...	1	1	15
Phœnix	Centre	1	30	2	2	2	1	38	1	...	...	...	2	2	40
Rainey	Clearfield	1	50	10	2	3	2	68	1	...	...	2	...	3	71
Reading	do.	1	33	5	...	3	...	42	1	...	...	...	...	3	45
Retort	Centre	1	45	5	...	5	2	58	1	...	...	1	2	4	62
Robertsdale	Huntingdon	1	190	30	5	16	7	249	4	2	36	10	3	55	304
Rothrock	Clearfield	1	180	15	11	7	3	215	2	2	...	3	1	8	223
Sommerville No. 4	do.	1	102	8	4	6	2	123	1	...	...	5	3	9	132
Sommerville No. 5	do.	1	55	7	1	3	...	67	1	...	...	4	2	7	74
Staffordshire	do.	1	90	8	2	4	1	106	1	...	...	3	1	5	111
Sterling No. 1	do.	1	130	23	4	11	3	172	4	1	...	12	1	18	190
Sterling No. 2	do.	1	26	4	...	3	...	34	...	...	...	...	1	1	35
Sterling No. 7	do.	1	88	4	2	4	4	103	...	1	...	2	...	3	106
Shoff	do.	1	140	6	1	9	...	157	1	...	...	3	1	5	162
Troy	do.	1	275	8	4	3	2	293	2	1	...	5	1	9	302
Tunnel	Centre	1	16	...	1	1	1	20	...	...	...	1	...	1	21
Tunnel (cannel coal)	Clearfield	...	9	...	2	1	...	12	1	...	...	4	1	6	18
Tunnel (bituminous coal)	do.	...	8	...	2	1	...	11	1	...	2	...	1	4	15
Victor No. 1	do.	1	70	2	4	7	1	85	1	1	...	6	2	10	95
Victor No. 2	do.	...	8	...	...	1	...	9	...	...	...	...	1	1	10
Victor No. 3	do.	1	18	2	1	1	...	23	...	...	...	...	...	...	23
Washington	do.	1	50	8	3	3	1	66	1	...	...	2	...	3	69
Webster No. 4	do.	1	110	3	3	9	3	129	2	...	...	8	2	12	141
Woodland cannel coal	do.	1	33	2	...	2	...	38	1	...	...	5	1	7	45
Woodvale shaft	Huntingdon	1	30	1	2	2	...	38	2	...	...	10	...	12	50
Total		104	7,497	843	253	603	209	9,529	121	34	115	389	142	801	10,330

TABLE IV.—*List of Fatal Accidents occurring in and about the Mines of the Eighth Bituminous Mine District for the year ending December 31, 1891*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	No. of orphans.	Name of Colliery.	Location County.	Nature and Cause of Accident.
Jan. 10.	Thomas Shipley.	Miner.	28	. . .	. . .	Ocean No. 2.	Clearfield.	Shipley had started to mine along a heading pillar, and had taken about two feet of coal off. The slate, 20 inches thick, had been broken over the coal about the distance mined out; no props were set to support it, and it fell crushing his skull.
10.	Calvin Rhue.	Miner.	35	1	2	Ocean No. 2.	Clearfield.	Neck broken by above described accident.
Feb. 24.	Martin Lucie.	Miner.	30	1	3	Atlantic No. 1.	Clearfield.	Was killed by a fall of coal which was not spragged; he left a small pillar of coal in, but it was crushed out by the squeeze.
Mar. 6.	Thomas Edgar.	Miner.	33	1	3	Troy.	Clearfield.	Was killed by a fall of roof slate which had slips on all sides; closer examination and better propping would have prevented this, as the piece was about 12 feet long by 7 feet wide.
16.	Michael Matchi.	Miner.	30	1	1	Eureka No. 8.	Clearfield.	Fatally burned by the explosion of a 25 pound keg of powder in his room; it is supposed he attempted to open it with a pick.
27.	Abram W. Edwards.	Miner.	29	. . .	. . .	Bedford.	Bedford.	Was fatally injured by a fall of rock which was full of slips and joints.
June 2.	Evan L. Jones.	Miner.	19	. . .	. . .	Pacific.	Clearfield.	Fatally injured by a fall of "bone" coal from roof; he had been warned to take more care in propping.
July 23.	Andrew Force.	Miner.	18	. . .	. . .	Forest.	Clearfield.	Fatally injured by a fall of "bone" coal which he had neglected to prop.
Sept. 28.	John C. Cromwell.	Miner.	37	1	4	Woodvale shaft. . . .	Huntingdon.	Killed instantly by a premature explosion of dynamite while in the act of tamping, eleven sticks of which had already been put in the hole and these were being forced back with an iron bar in the hands of the victim, while his partner was putting in the explosives as if it was so much dirt. The explosion was caused by the concussion in tamping.

Oct. 14.	William Maddox.	Miner.	13	. .	. .	Troy.	Clearfield.	Fatally injured, dying at the Cottage hospital, Philipsburg, in three days after. The boy met with this accident while helping his neighbor; while in the act of taking down a piece of coal a stone weighing about 200 pounds fell, cutting his forehead slightly; it was not considered serious at the time.
26.	Michael Guito.	Miner.	26	1	. .	Baltic.	Clearfield.	Skull crushed by a fall of stone weighing 150 pounds; his partner was found under a stone probably a ton in weight uninjured; the men were tak'ng a skip off the side under a slippery part of roof, and failing to take proper precaution after being warned of the danger by the mining-boss.
29.	Philip Bradley.	Miner.	58	1	9	Pardee No. 1.	Clearfield.	Killed instantly by a fall of coal and "bone" weighing probably two tons; he was engaged drawing heading stumps and though the danger was evident, he failed to take any precaution even after being told by his son not to take such a risk.
Nov. 8.	William Abraham, Jr.. . . .	Miner.	15	. .	. .	Forest.	Clearfield.	Fatally injured; at first it was not considered serious as the extent of injury was just a broken thigh, but reaction failed to set in and he died in three hours. Criminal neglect in the father of this boy was the cause of the accident; he had taken out a piece of coal 18 feet long along the roadside and 8 feet into the pillar, and left hanging a "bone" over a foot thick over all this space without a prop; and when the tracklayer just twenty minutes before had told him to prop the "bone" he was met with the reply of "I could sleep under that and be safe."
Dec. 3.	Jas. A. Wilson.	Trackman.	42	1	2	Coaldale No. 3.	Clearfield.	Instantly killed by being run over by a loaded car in the trip; he had stepped off the empty car track right in front of the moving loads; he must have been absent-minded at the moment for there was plenty of room on the side.

TABLE V.—*List of Non-Fatal Accidents occurring in and about the Mines of the Eighth Bituminous Mine District, for the year ending December 31, 1891.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
Jan. 5.	Adam Hutchinson. . .	Driver. . . .	24	Atlantic No. 1.	Clearfield.	Foot broken; caught between car bumpers.
9.	James Ashurst. . . .	Miner. . . .	56	Colorado No. 1.	do.	Hips bruised by fall of rock having slip on two sides.
10.	Steven Madigan. . . .	Driver. . . .	20	Montana.	do.	Foot broken by car jumping track.
13.	William Bryant. . . .	Miner. . . .	32	Kearney.	Bedford.	Arm broken by fall of rock.
13.	Henry Stanton. . . .	Driver. . . .	30	Pardee No. 2.	Clearfield.	Ankle crushed between car bumpers.
15.	Michael Dodo. . . .	Miner. . . .	29	Acme.	do.	Foot hurt, two toes broken in going to see the result of a blast without examining the roof.
16.	Andrew J. Blair. . . .	do. . . .	38	Robertsdale.	Huntingdon.	Collar-bone broken by small piece of rock.
16.	John Bedno.	do. . . .	32	Cataract.	Clearfield.	Hands injured by explosion of powder while tamping a shot.
17.	William Turnbull. . . .	do. . . .	36	Baltic No. 2.	do.	Head and shoulder badly bruised; undermining a piece of coal which had been a shot, without putting a sprag.
22.	Henry Beynon. . . .	do. . . .	49	Eureka No. 2.	do.	Wrist dislocated; his fore-arm was caught between car and rib while in the act of "sluing" the car.
23.	William Keenan. . . .	do. . . .	31	Coaldale No. 4.	do.	Foot and leg badly bruised while shearing a fall of coal without a sprag after he had put a blast in it.
24.	Charles Alloway. . . .	do. . . .	15	Robertsdale.	Huntingdon.	Face, breast and arms burned; he was filling a cartridge with a lamp on his head, a spark from which fell into the powder.
28.	James Jones.	Trip-rider. . .	14	Rothrock.	Clearfield.	Eye knocked out and cheek badly cut by being kicked by a mule while attempting to pass.
29.	Arthur Walker. . . .	Miner. . . .	15	Decatur No. 1.	do.	Eye destroyed by a piece of steel flying from a wedge while using it.
Feb. 5	John Catherwood. . . .	Driver. . . .	23	Montana.	do.	Rib broken by being caught between cars.
5.	Thomas Griffiths. . . .	Miner. . . .	38	Mount Vernon No. 5. . .	do.	Foot badly bruised by fall of "bone" coal.
11.	James Smith.	do. . . .	51	Sterling No. 1.	do.	Two ribs broken by fall of roof.
11.	Daniel McIsaac. . . .	Driver. . . .	14	Cataract.	do.	Ankle bruised; by being run over by a car.
16.	Bartley Donovan. . . .	Trapper. . . .	13	Forest.	do.	Back, ribs and breast badly bruised while putting brake on, which gave way and threw him between moving cars and a prop.
19.	Richard Bowder. . . .	Miner. . . .	19	Brown No. 1.	Bedford.	Back and a hip injured by fall of ripping while in the act of undermining.
19.	Joseph Schultz. . . .	do. . . .	30	New Castle.	Clearfield.	Leg fractured and ankle bruised by a fall of roof.
19.	William Kipling. . . .	do. . . .	16	Troy.	do.	Loins and hips bruised; fall of roof.
21.	John Joseph.	do. . . .	34	Excelsior No. 4.	do.	Hand injured by fall of coal.
21.	Albert Robins.	do. . . .	28	Decatur No. 2.	do.	Shoulder-bone broken by fall of coal, while undermining without a sprag.
Mar. 9.	Evan Reese.	Driver. . . .	47	Atlantic No. 1.	do.	Leg broken by being caught between cars.

	11.	William McClimant,	Car shifter,	40	Acme,	do.	Shoulder hurt and thumb mashed by having a car of coal dumped on him.
	28.	Andrew Anderson,	Furnace-man,	40	Cataract,	do.	Loins and ribs injured by falling from sett of timbers.
Apr.	1.	John Muneson,	Miner,	38	Sterling No. 1,	do.	Body bruised generally by fall of slate.
	7.	Lewis Hanson,	Dumper,	38	Atlantic No. 2,	do.	Small bone of leg broken; caught between cars.
	9.	P. Sullivan,	Miner,	48	Pacific No. 1,	do.	Back hurt by fall of roof from clay slip.
	9.	Thomas Samuels,	do.	62	do.	do.	Small bone of leg broken by fall of top coal.
	10.	James McQuillan,	do.	50	Atlantic No. 1,	do.	Foot badly bruised by a piece of coal.
	10.	Edwin Price,	do.	65	Mount Vernon No. 5,	do.	Back badly bruised by fall of rock.
	10.	John Welsh,	do.	..	do.	do.	Foot badly bruised by fall of rock
	16.	George Mike,	do.	35	New Castle,	do.	Ankle and leg bruised by fall of coal.
	16.	Richard Trout,	do.	60	Brown No. 2,	Bedford,	Thigh broken by coal and top coal.
	20.	James McCann,	do.	50	Mount Vernon No. 5,	Clearfield,	Back and legs badly bruised by fall of coal.
	28.	Con Allen,	Driver,	22	Atlantic No. 1,	do.	Foot bruised by car falling on him.
May	4.	James R. Smith,	Miner,	28	Gazzam No. 1,	do.	Burned by premature explosion of shot.
	17.	James Phillips,	Driver,	49	Coal Run,	do.	Wrist badly bruised; caught between brake and bumper.
	20.	John Byron,	Miner,	30	Derby,	do.	Leg broken while breaking a piece of coal.
	20.	Timko Lecisson,	do.	37	Sterling No. 1,	do.	Leg and arm broken while taking out a sprag.
	22.	George Shoff,	do.	15	Excelsior No. 4,	do.	Spine injured; was caught between car and roof.
June	5.	William Currie,	do.	27	Somerville No. 5,	do.	Bruised and internally injured by fall of top coal.
	27.	Peter Olson,	do.	43	Eureka No. 2,	do.	Leg broken and hip bruised while resetting a prop.
	27.	Bertie Williams,	do.	18	Eureka No. 8,	do.	Hip and leg injured by fall of slate.
July	16.	Alex. Ashcowack,	Patcher,	14	Eureka No. 5,	do.	Foot and leg hurt by being run over by the "Barney."
	29.	Henry Walker,	Miner,	36	Laurel Run,	do.	Both collar-bones broken by fall of coal.
Aug.	5.	John Pluetko,	do.	26	Eureka No. 5,	do.	Back strained by fall of slate and top coal.
Sept.	28.	John Cartwright,	do.	35	Woodvale shaft,	Huntingdon,	Cut and bruised generally, by premature explosion of eleven sticks of dynamite.
	30.	Valintins Paluski,	do.	45	Mount Vernon No. 5,	Clearfield,	Back bruised by fall of rock.
Oct.	7.	George Mardson,	do.	46	Colorado,	do.	Collar bone broken and head badly bruised by fall of coal.
	9.	John Harvey,	do.	21	Dunlope,	do.	Leg broken by a fall of coal while shearing.
	20.	Thomas Abrams,	do.	32	Atlantic No. 1,	do.	Foot mashed by being run over by a car.
	20.	Jacob Askow,	do.	32	Columbia No. 5,	do.	Ribs fractured and ankle sprained by a fall of rock.
	29.	William Martin,	do.	28	Eureka No 8,	do.	Leg bruised by a fall of coal.
	30.	William Ridgway,	do.	45	Drane,	do.	Body bruised by a fall of coal.
Nov.	2.	Joseph Hale,	do.	30	O'Shanter,	do.	Back sprained by fall of rock.
	9.	Williams Evans,	do.	50	Belvern,	do.	Arm badly crushed by fall of coal.
	12.	John Vicoski,	do.	40	Eureka No. 5,	do.	Hips and foot bruised by fall of top coal.
	19.	George B. Ott,	Mine boss,	28	Kearney,	Bedford,	Spine dislocated by fall of a stone from roof.
	25.	John Stanko,	Miner,	22	Cataract,	Clearfield,	Knees bruised by fall of coal.
	25.	Jacob Ramage,	do.	25	Cumberland,	Bedford,	Back badly injured, and ankle dislocated by a fall of slate.
	25.	Isaac Gregg,	do.	49	Sterling No. 1,	Clearfield,	Back and leg slightly injured by a stone falling from the roof.
	30.	Robert Cole,	do.	..	Victor No. 1,	do.	Leg broken by being caught between the cars.